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The Effects of Message-Framing on Psychological Control with Respect to Breast Self-Exam Performance

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LOYOLA UNIVERSITY CHICAGO

THE EFFECTS OF MESSAGE-FRAMING ON PSYCHOLOGICAL CONTROL
WITH RESPECT TO BREAST SELF-EXAM PERFORMANCE

A THESIS SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

BY

DEBORAH KAREN DILWORTH

CHICAGO, ILLINOIS

JANUARY 1992

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INTRODUCTION

The American Cancer Society recommends that Breast Self-Exams (BSEs) be performed on a regular monthly basis. The recommendation stems from the knowledge that when breast cancer is diagnosed at an early stage, the survival rates are relatively high (American Cancer Society, 1983), and further, that a monthly BSE can aid in the early detection of malignant breast lumps (e. g., Foster & Costanza, 1984). Regardless of the minimum effort required by women to perform BSEs (5 minutes per month), very few women adhere to the American Cancer Society's recommendation (e. g., Bennett et al., 1983).

What are the sources of resistance by women to perform BSEs? Previous research has enumerated several: doing BSE requires women to perform an infrequent behavior (e. g., Carstenson & O' Grady, 1980; Grady, 1984; Zapka & Mamon, 1982), to learn to perform a specific skill (e. g., Edwards, 1980; Hill et al., 1982), and to perform a behavior that, due to its private nature, may receive little external reinforcement (e. g., Grady, Goodenow & Wolk, 1984). The purpose of the present research is to bring light to other potential sources of resistance to BSE performance, drawing

on past relevant research, and especially that from social cognition, as a basis for forming plausible and testable ideas. More specifically, the present research draws on concepts of psychological control and examines how different types of messages might affect one's feelings of control. Further, the research examines how those feelings of control might translate into one's attitudes, intentions, and behaviors with respect to breast self-exams.

REVIEW OF THE RELATED LITERATURE

Meyerowitz and Chaiken's (1987) Study

Meyerowitz and Chaiken (1987), in their attempt to understand the resistance to perform breast self-exams, proposed that in the short run, BSE is a risky behavior that involves uncertain outcomes. Performing BSE does not prevent cancer; it detects cancer (Leventhal & Watts, 1966). In their study, Meyerowitz and Chaiken (1987) invoke the framing postulate of Kahneman and Tversky's (1979, 1982; Tversky & Kahneman, 1981) prospect theory to predict decisions to perform BSE. The framing postulate proposes that people encode information relevant to risky decisions in terms of potential gains or potential losses with respect to some flexible and psychologically determined reference point such as health. Because different presentations of factually equivalent information are postulated to change the location of the reference point, such framing manipulations can influence whether people encode information as gains or losses. Further, the postulate assumes that losses, which in their absolute value are equivalent to gains, are weighted more heavily in

peoples' minds. Thus, the postulate, by assuming that greater emphasis is attributed to losses and that framing manipulations affect whether outcomes are encoded as gains or losses, predicts that risky behavioral choices will be more likely when information is framed in terms of the losses associated with behavioral choices. Invoking the framing postulate in their study, Meyerowitz and Chaiken (1987) tested the hypothesis that a pamphlet promoting BSE compliance would be more effective if it contained strong arguments stressing the negative consequences of not performing BSE rather than equally strong arguments stressing the positive consequences of performing BSE, their assumption being that performing BSE is perceived by women to be a risky behavior.

Finding support for their hypothesis, the authors attempt to rule out three alternative explanations for their findings that they had anticipated. The first alternative explanation is the negativity bias effect in person perception and decision-making research--the finding that negative information exerts a greater judgmental impact than objectively equivalent positive information (e. g., Anderson, 1965; Birnbaum, 1972; Fiske, 1980; Slovic & Lichtenstein, 1968). In other words, negative information is weighted more heavily because it is perceptually more salient or vivid to people who view the world as basically positive (Kanouse & Hanson, 1972; Sears & Whitney, 1972).

The second alternative explanation is that negative information is confounded by its fearful content. In fact, research investigating fear appeals has generally found that high-fear (negative) messages are more persuasive than low-fear (positive) messages (e. g., Higbee, 1969; Leventhal, 1970; and Sutton, 1982).

Whether or not Meyerowitz and Chaiken (1987) successfully ruled out the first two alternative explanations for their findings is debatable for two reasons. First, the measures they used to detect negativity bias and fear arousal in the first posttest were not used again in the second posttest. Second, Meyerowitz and Chaiken (1987) asked subjects to recall the content of their respective messages, a measure that may not have elicited the types of cognitive responses capable of revealing the possible influence of the negativity bias and fear arousal on subsequent attitudes, intentions, and behaviors. Numerous studies have supported the notion that cognitive responses, or units of information pertaining to an object or issue that are the result of cognitive processing (Cacioppo et al., 1981) can, in fact, mediate attitude change, and under certain conditions, can also mediate behavior change.

What kinds of cognitive responses might mediate such attitude and behavior change? Classification of cognitive responses (Cacioppo et al., 1981) in past research has

yielded three response dimensions: 1) polarity, or the degree to which the response is in favor of or opposed to the advocacy; 2) origin, or the primary source of the information contained in the subject's response; and 3) target, or the focus at which the response is directed. In addition to those dimensions, the dimensions of saliency (how often the cognitive response is elicited) and processing mode (emotionality of the response) could provide great insight into potentially mediating variables of subjects' subsequent attitudes, intentions, and behaviors. For example, in the context of Meyerowitz and Chaiken's (1987) study, would subjects in the loss-framed condition have mentioned negative information more than subjects in the gain-framed condition would have mentioned positive information? Similarly, would subjects in the loss-framed condition have expressed greater fear elicited by their messages than subjects in the gain-framed condition? Answers to such questions cannot be ascertained given the procedure Meyerowitz and Chaiken (1987) used to elicit the above types of responses.

The third explanation Meyerowitz and Chaiken (1987) explore is that the framing manipulation might affect women's BSE attitudes and behavior via its influence on one or more variables given importance as predictors of health behavior within protection motivation theory (Rogers, 1975, 1983; Rogers & Mewborn, 1976) and the related health belief

model (Becker, 1974; Becker & Maiman, 1975). Those variables are perceived severity of breast cancer, perceived susceptibility to breast cancer, perceived efficacy of BSE as a coping response, and perceived self-efficacy in performing BSE. Only the last was found to differentiate between the women in the loss- and gain-framed information groups in their study.

Personal Control as a Mediating Variable

For some reason, women exposed to the loss-framed information did adhere to the American Cancer Society's recommendation that BSEs be performed monthly more than did the women exposed to the gain-framed information. What process, if not fear arousal, salience, or those variables discussed by the protection motivation theory, might underly Meyerowitz and Chaiken's (1987) potentially fruitful finding? With the exception of prospect theory's implicit assumption that a loss (vs. gain) frame increases motivation for risk-seeking behavior, most prior research on positive vs. negative appeals provides little insight into the cognitive and affective mechanisms that might underly the greater persuasiveness of a loss-framed message.

In the only past persuasion study explicitly guided by prospect theory's framing postulate, Yates (1982) studied consumers' decisions to purchase energy-saving devices for their homes. She found that a negatively (vs. positively)

framed message enhanced persuasion, but only when the message advocated a low- (vs. high-) cost energy device. Common sense would allow for such a finding--obviously, no one wants to pay a large sum of money, regardless of the negativity associated with not paying such a sum. However, in the long run, such a purchase would pay off. What then, is the source of resistance to engaging in a high-cost behavior when, in the long run, such a behavior would yield savings? What would be the result of a study that manipulated both a loss- and gain-framed message along with a high- and low-cost message? These questions and their non-empirically based answers suggested to me that underlying the behavior, in both economic and health domains, could be the construct of psychological control.

Some have argued that personal control is integral to self-concept and self-esteem, constituting a fundamental psychological need (Bandura, 1977; de Charms, 1968; Fenichel, 1945; Hendrick, 1942; R. W. White, 1959). In the last few years, researchers have begun to examine locus of control in the context of health attitudes and behaviors. Scale development has been one avenue of research. One scale developed by Lau-Ware (1982) is the multidimensional Health Locus of Control scale. The scale contains four subscales: self-control over health (beliefs in the efficacy of self-care), provider-control over health (beliefs in the efficacy of doctors), chance health outcomes, and general

health threat. Another scale developed by Wallston, Wallston, and DeVellis (1978) includes the first three dimensions of Lau-Ware's (1982) scale. Finally, Krantz, Baum, and Wideman (1980) developed the Health Opinion Survey in order to assess attitudes towards self-directed or informal treatment.

Clearly, control is a construct given great attention in the health field. In stress research, the effects of providing subjects with information and magnifying participation and choice have been examined in terms of the concept of personal control (e. g., Averill, 1973; Langer & Rodin, 1976). Magnified participation and choice often lead to increases in perceived control, since they may provide subjects with the belief that they can affect their health outcomes. Further, information has been thought of as a form of cognitive control as it may increase the ability to prepare for aversive events and often results in the cognitive interpretation of events so that threat is lessened (Averill, 1973; Seligman, 1975).

Outside of stress research, internal locus of control has been linked to knowledge about disease (Seeman & Evans, 1962; B. Wallston, Wallston, Kaplan, & Maides, 1976), ability to stop smoking (Coan, 1973; James, Woodruff, & Werner, 1965; Kaplan & Cowles, 1978; Mlott & Mlott, 1975; Steffy, Meichenbaum, & Best, 1970; Straits & Sechrest, 1963; Williams, 1973), ability to lose weight (B. Wallston et al.,

1976), following medical regimens (Lewis, Morisky, & Flynn, 1978), effective use of birth control (MacDonald, 1970), and getting preventive inoculations (Dabbs & Kirscht, 1971).

Given the importance of health locus of control (HLC) beliefs, researchers have begun to address the question of their origins. Rotter (1975), discussing general locus of control, suggests that these beliefs develop from specific experiences and past reinforcement history. In other words, people who have experiences or have been reinforced for successful control attempts in the past have greater belief in personal control than those people unsuccessful in their attempts for control.

Although this origin seems a likely one for determining peoples' HLC beliefs, I would expect that the nature of the disease itself would also play a role in such determination. The remainder of the introduction will examine the perceptions among women of breast cancer and BSE and, further, how different messages might affect such perceptions.

Hypotheses

Breast cancer is perceived by most women to be an event not within their control: you can detect it, not prevent it. How would loss- and gain-framed information associated with low- and high-cost behavior affect such perceptions? Further, how would such perceptions affect

subsequent behavior?

Women confronted with a loss-framed, low-cost message are implicitly being told that they do not have control over getting cancer, but that they do have control over minimizing its effects. I would expect women exposed to such messages to experience reactance, a response to loss of control that is most likely to occur when existing or expected control is arbitrarily threatened or withdrawn (J. W. Brehm, 1966; S. S. Brehm & Brehm, 1981; Wortman & Brehm, 1975). Reactance will be greater the stronger one's expectation of freedom, the greater the threat, the greater the importance of the event, and the stronger the implication for other freedoms (J. W. Brehm, 1966; Wicklund, 1974). In the context of Meyerowitz and Chaiken's (1987) study, then, women exposed to loss-framed messages may have performed BSEs to ensure that they have control over the outcome of breast cancer, as their messages imply. Certainly, the loss-framed messages threatened greatly their freedom to live, and having breast cancer would deny them other freedoms.

How would women in Meyerowitz and Chaiken's (1987) study have reacted to the loss-framed message if they had been told that performing BSE would entail a great amount of effort and time (a high-cost behavior)? Although women in this condition are implicitly told that they can control (minimize) the effects of breast cancer, such control can

only be achieved at a great cost. I would hypothesize that helplessness, or the near opposite to reactance, would be these women's experience. Instead of responding with efforts to restore lost freedoms, the women would probably give in and fail to make any effort to change their seemingly hopeless situation. In other words, these women would probably perceive breast cancer to be an event they could not control, and as such, would perform BSE less often (if at all). Initially, however, these women would probably feel that they did have control over breast cancer, as helplessness is often preceded by a short period of reactance.

Women exposed to gain-framed messages in Meyerowitz and Chaiken's (1987) study were implicitly told that breast cancer was an event whose effects they could minimize with minimum effort. Possibly, however, women in this condition were unintentionally given the illusion of control, the exaggeration of the degree of control one has in situations that are actually controlled by chance or other uncontrollable forces (Langer, 1975). Initially perceiving breast cancer to be an event determined by external control, the positive, gain-framed message may have acted to make women in this condition perceive breast cancer not only as an event determined by them, but also to perceive their own involvement in detecting breast cancer as not necessary in light of their illusion of control. Women exposed to gain-

framed messages requiring high-cost behavior might also initially gain an illusion of control, but because of the greater effort needed to prevent breast cancer, I would expect that these women, in the long run, would perceive breast cancer to be an event determined by external forces. This expectation draws on the notion that a high-cost behavior may serve to elicit a helplessness response.

Immediately after receiving a gain- or loss-framed message, regardless of cost, I would expect all women, regardless of condition, to have positive attitudes towards BSE, albeit for different reasons (See Table 1 for an outline of the study hypotheses). Those women in the loss conditions would have more positive attitudes due to reactance to their messages. Those women in the gain conditions would have more positive attitudes due to the illusion of control instilled by their messages. Similarly, I would expect all women, immediately after the intervention, to have equally positive and great intentions of performing BSE.

At a follow-up, I would expect those women in the loss-framed low-cost message condition to have the most positive attitudes towards, the greatest intentions of performing, and to have actually performed BSEs most often, followed by those women in the gain-framed low-cost message condition, followed by those women in the gain-framed high-cost message condition, followed by those women in the loss-

framed high-cost message condition. More concisely, I would expect an interaction, such that depending on the cost inherent in a message, the loss and gain frames would yield different implications for womens' attitudes towards, intentions of performing, and performance of BSEs.

Finally, with respect to perceived self-efficacy in performing BSE, I would expect that all women would initially be equal in their perceived self-efficacy, but for different reasons, reasons that could be elicited by specific probing of cognitive responses. Those women in the loss-framed message conditions might perceive self-efficacy due to reactance (i.e., in order to combat their seemingly arbitrary loss of control, they would have to believe that they are able to be effective in their performance of BSE), whereas those women in the gain-framed message conditions might perceive self-efficacy due to their illusion of control (i.e., because they do not really believe that they are in danger of getting breast cancer, these women do not question their ability to perform BSE, and so assume that they would be effective in performing BSEs). At a follow-up, however, I would expect that women in the low-cost conditions would perceive more self-efficacy than women in the high-cost conditions, and that women in the loss-framed low-cost condition would perceive the greatest self-efficacy. The last expectation assumes that women in the loss-framed low-cost condition not only view BSE as

something they are able to control because of its low cost, but also reflects their actually having performed BSE, serving to reconfirm their perceived self-efficacy.

Table 1. Hypotheses at Posttests 1 and 2 as a function of condition.

OUTLINE OF STUDY HYPOTHESES

<u>Condition</u>	<u>Time 1</u>	<u>Time 2</u>
Loss-framed, Low-cost (LFLC)	--high reactance	--high reactance
	--low illusion of control	--low illusion of control
	--low helplessness	--low helplessness
	--positive attitudes	--most positive attitudes
	--great intentions	--greatest intentions
		--perform BSE most
	--high self-efficacy	--highest self- efficacy

OUTLINE OF STUDY HYPOTHESES, CONT'D.

<u>condition</u>	<u>Time 1</u>	<u>Time 2</u>
Loss-framed, High-cost (LFHC)	--high reactance	--low reactance
	--low illusion of control	--low illusion of control
	--low helplessness	--high helplessness
	--positive attitudes	--least positive attitudes
	--great intentions	--least great intentions
		--perform BSE least often
	--high self-efficacy	--lower self- efficacy than LFLC group

OUTLINE OF STUDY HYPOTHESES, CONT'D.

<u>condition</u>	<u>Time 1</u>	<u>Time 2</u>
Gain-framed, Low-cost (GFLC)	--low reactance	--low reactance
	--low helplessness	--low helplessness
	--high illusion of control	--high illusion of control
	--positive attitudes	--2nd most positive attitudes
	--great intentions	--2nd greatest intentions
		--perform BSE 2nd most often
	--high self-efficacy	--2nd highest self-efficacy

OUTLINE OF STUDY HYPOTHESES, CONT'D.

<u>Condition</u>	<u>Time 1</u>	<u>Time 2</u>
Gain-framed, High-cost (GFHC)	--low reactance	--low reactance
	--high illusion of control	--low illusion of control
	--low helplessness	--high helplessness
	--positive attitudes	--2nd least positive attitudes
	--great intentions	--2nd least great intentions
		--perform BSE 2nd least often
	--high self-efficacy	--lower self- efficacy than LC groups

PILOT TESTS

INTRODUCTION

The pilot tests were conducted for six primary reasons. The first concerned the attempt of the researcher to become alert to and correct any problems that might arise during the course of the main study. The second reason was to find the best means for categorizing the types of cognitive responses that might occur and to analyze their potential effect on subsequent attitudes and intentions. The third reason concerned testing the reliabilities of the three measures underlying the study's central hypotheses. Because there were no current measures of reactance, illusion of control, and helplessness, the experimenter created her own measures based on the theoretical underpinnings of those psychological concepts. The fourth reason concerned manipulation checks of the four different messages. The two questions of primary interest were 1) How much time and effort are required to perform BSE?, and 2) What are the benefits (costs) associated with performing (not performing) BSE?. The fifth reason was to gain an understanding of what women's attitudes towards BSE was

prior to the study. As such, a pretest was administered in which womens' attitudes towards BSE and other health practices were ascertained. Finally, the sixth reason concerned an attempt to determine whether or not the pilot test results were in the direction of supporting the study hypotheses. Although only one pilot test was planned at the outset, the second one was conducted as it became clear that some changes in the first should be made before conducting the main study.

METHOD

Subjects

Fifty-four Loyola undergraduate women enrolled in introductory psychology participated in the first pilot test to fulfill a course requirement. Thirty Loyola undergraduate women recruited on campus participated in the second pilot test. Each subject was randomly assigned to one of four conditions, conditions comprising a 2 X 2 design. Those conditions were as follows: a loss-framed, low-cost message condition; a loss-framed, high-cost message condition; a gain-framed, low-cost message condition; and a gain-framed, high-cost message condition.

Materials

The pamphlet and measures administered to subjects were of the same format as those administered to subjects in the main study (See Pilot Tests Procedure section for measures used).

Procedure

The women in each condition were told that the

materials they received constituted a "health attitudes" study, and that the study concentrated on breast cancer and breast self-examination. Prior to receiving the pamphlets, subjects received a brief "health attitudes" questionnaire.

Immediately after receiving the pamphlets, subjects received the following measures administered in a random order so as to prevent confounding due to one specific order (See APPENDIX B for actual measures):

- 1) questions related to the variables accorded importance as predictors of health behavior within protection motivation theory (Rogers, 1975, 1983; Rogers & Mewborn, 1976) and the related health belief model (Becker, 1974; Becker & Maiman, 1975). Specifically, those variables are:

- A) perceived susceptibility to breast cancer;
- B) perceived severity of breast cancer;
- C) beliefs in BSE's efficacy; and
- D) perceived self-efficacy in performing BSE.;

- 2) measures of belief salience and emotional responses evoked by the messages, obtained by asking subjects to write down all thoughts that occurred to them during their respective messages;
- 3) recall of the correct procedures for performing BSEs and of the arguments contained in the

pamphlets;

4) Wallston et al. (1978) Multidimensional Health Locus of Control (MHLC) scale;

5) measures of reactance, helplessness, and illusion of control;

6) measures of attitudes towards BSE; and

7) measure of intentions of performing BSE.

After completing the measures, subjects were thanked for participating, and were told that further information would be sent to them upon request at the completion of the study.

PILOT TEST RESULTS

The six reasons for conducting a pilot study will be discussed individually with respect to the results. Furthermore, because two pilot studies were conducted, the results will be discussed for the two studies separately.

Unforeseen Problems

The first reason for conducting the pilot tests concerned an attempt to ascertain that no unforeseen problems would arise in the main study. Two minor problems did arise. First, some subjects thought that reading the pamphlet was the only task requested of them. To make the subjects aware of the questionnaire following the pamphlet, the experimenter informed subjects of such. Specifically, while handing out the pamphlets, the experimenter told subjects, "You will be receiving a questionnaire after you have finished reading this pamphlet." Besides making subjects aware of their required tasks, the aim of such clarification reflected the experimenter's hope that subjects would process the pamphlet contents in a thoughtful manner. Presumably as a result of the experimenter's added instructions, this problem did not arise during the second

pilot study.

The second problem arose via an inspection of pamphlet contents. The experimenter noted that four of the statements, constant in all of the pamphlets, might lead to a confounding of conditions. The first such statement was on the page entitled, "Basic Facts," and read: "Today, breast cancer can be found at the earliest possible stage when chances for cure are nearly 100 percent." The experimenter felt that this statement might promote an illusion of control, and as such, might lower the strength of the two loss-framed conditions. The other three statements were on the page entitled, "How To Do BSE," and read, in turn, "Women with small breasts will need at least 2 minutes to examine each breast...Larger breasts will take longer...Choose the method easiest for you." The experimenter felt that these statements may confuse subjects as to the actual time and effort involved in doing BSE, especially those subjects in the two "high-cost" conditions. Due to these possible confounds, the experimenter replaced the first statement with the following, "The American Cancer Society recommends that all women perform breast self-exams (BSEs)." The last three statements were erased from the pamphlet. The second pilot test employed the revised pamphlet.

Cognitive Response Categorization/Analysis

The second reason for conducting the pilot tests was to find the best means for categorizing the types of cognitive responses that occurred and to analyze their potential effect on attitudes and intentions. Two ways of categorizing the cognitive responses were decided on by examining the responses of subjects in the first pilot study. The first concerned the favorability of the responses and the categories were, "favorable," "unfavorable," and "neutral." The second concerned the source of the responses and the categories were, "message," "issue," and "message and issue." All of the above categories encompassed fully the types of cognitive responses made by subjects and were used again for the second pilot test results. Due to the possible confounding of conditions in the first pilot test (N=54) and to the small number of subjects (N=30) in the second pilot test, the experimenter did not categorize the cognitive responses with respect to the study hypotheses, i.e., in terms of reactance, helplessness, and illusion of control. Such categorization was done during the main study.

In an attempt to ascertain what, if any, relationships existed between the cognitive responses and subsequent attitudes and intentions, two chi-square analyses and two one-way ANOVAS were performed. The first chi-square examined the effects of the frame and cost manipulations on the favorability of cognitive responses, those responses

having been coded categorically. Cognitive responses were coded as favorable, unfavorable, or neutral. The number of people in the two pilot studies who had favorable, unfavorable, or neutral responses are shown in Appendix A, Table 9. Neither analyzing the two pilot tests' data separately nor jointly yielded significant differences among the conditions. It appears as though the frame and cost manipulations had no effect on the favorability of cognitive responses.

The second chi-square examined the effects of the frame and cost manipulations on the source of cognitive responses, those responses having been coded categorically. Cognitive responses were coded as message, issue, or message and issue. The number of people in the two pilot tests who gave "message," "issue," or "message and issue" responses are shown in Appendix A, Table 10. Neither analyzing the two pilot tests' data separately nor jointly yielded significant differences among the conditions. It appears as though the frame and cost manipulations had no effect on the source of cognitive responses.

The first ANOVA examined the effects of the favorability and source of cognitive responses on BSE attitudes. Combining the data from the two pilot tests, those subjects with favorable cognitive responses were marginally significantly more likely to have more positive attitudes than were those subjects with unfavorable or

neutral cognitive responses [(main effect, Favorability: $F=2.61$, (2,69), $p \leq .081$); See mean scores in Appendix A, Table 11]. This exploratory analysis, then, suggests that favorable BSE cognitive responses may be capable of predicting favorable BSE attitudes.

The second ANOVA examined the effects of the favorability and source of cognitive responses on BSE intentions. There was no significant difference or trend among conditions, combining data for the two pilot tests [(2-way interaction: $F=.961$, (2,69), $p \leq .387$); see Appendix A Table 12 for mean scores], indicating that favorability and source of cognitive responses had no effect on BSE intentions. There were few significant differences when examining the effects of cognitive responses, and even those differences should be interpreted with caution due to the unreliability of those differences across pretests, the marginality of some of the significant differences, and the small number of subjects in the second pilot test especially.

Accuracy of Measures

The third reason for conducting the pilot tests was to test the reliabilities of the measures, especially those of reactance, illusion of control, and helplessness. One of the BSE efficacy items was not significantly related to the other two ($r=-.03$, $P=.43$), and hence was dropped for the

second pilot test. The two self-efficacy items were significantly related ($r=.41$, $P=.001$) to each other. The subscales of the Multidimensional Health Locus of Control scale were reliable ("Internal" subscale ($\alpha=.73$); "powerful Others" subscale ($\alpha=.79$); and "Chance" subscale ($\alpha=.70$)). The BSE Attitudes index was reliable at the first pilot test ($\alpha=.94$). Four items were added to the index at the second pilot test and items were revised to allow for more extreme attitudes as almost all subjects during the first pilot test expressed highly positive attitudes. The revised BSE Attitudes index, used at the second pilot test, was reliable ($\alpha=.92$). One item was not related highly to the other items, however (corrected item-total correlation=.17), and so was not included in the main study. The first reactance index (there are two reactance indices, the first measuring threatened freedoms and the second measuring available options) was reliable at the first pilot test ($\alpha=.75$) and at the second pilot test ($\alpha=.88$). The second reactance index was also reliable at the first pilot test ($\alpha=.72$). Because the filler items seemed to promote a response bias towards the upper end of the scale, however, they were deleted from the questionnaire at the second pilot test. The revised second reactance index was reliable at the second pilot test ($\alpha=.74$). At the first pilot test, the reliability of the illusion of control index increased with the inclusion

of the filler items ($\alpha=.82$). Due to this inappropriate increase in reliability, the filler items were made more obviously true at the second pilot test. At the second pilot test, the reliability of the illusion of control index was not high with the fillers ($\alpha=.47$) but without the fillers, the reliability increased ($\alpha=.61$).

Manipulation Checks

The fourth reason for conducting the pilot tests was to perform manipulation checks on the four different messages. Manipulation checks were done only at the first pilot test as the manipulations, checked by subjects' pamphlet argument recall, were successful. Subjects in the gain-framed conditions reported arguments in gain language (i.e., stressed the positive consequences associated with performing BSE) significantly more often than did subjects in the loss-framed conditions [(main effect, Frame: $F=24.07$, (1,50), $p\leq.0001$); see Appendix A, Table 13 for mean scores]. There was, however, a main effect for cost, such that subjects in the low-cost conditions reported arguments in gain language significantly more often than did subjects in the high-cost conditions (main effect, Cost: $F=4.81$, (1,50), $p\leq.030$), giving rise to the possibility that the higher reporting of gain-framed arguments by subjects in gain-framed conditions might be confounded by the also higher reporting of gain-framed arguments by subjects in low-cost

conditions. Subjects in the loss-framed conditions reported arguments in loss language (i.e., stressed the negative consequences associated with not performing BSE) significantly more often than did subjects in the gain-framed conditions [(main effect, Frame: $F=14.35$, (1,50), $p \leq .0001$); see Appendix A, Table 14 for mean scores]. Again, however, there was a main effect for cost, such that subjects in the high-cost conditions reported arguments in loss language significantly more often than did subjects in the low-cost conditions (main effect, Cost: $F=4.09$, (1,50), $p \leq .048$), giving rise to the possibility that the higher reporting of loss-framed arguments by subjects in loss-framed conditions might be confounded by the also higher reporting of loss-framed arguments by subjects in high-cost conditions. Finally, subjects in the low-cost conditions reported arguments in terms of low-cost (with respect to time and effort involved in performing BSE) significantly more often than did subjects in the high-cost conditions [($F=2.72$, (1,50), $p \leq .105$); See Appendix A, Table 15 for mean scores]. The marginal significance of this main effect was due to a two-way interaction, subjects in the loss-framed, low-cost condition being most likely to report arguments in terms of low cost ($F=5.309$, (1,50), $p \leq .025$). Virtually no subjects reported arguments in terms of high cost, so the experimenter added one "cost" argument to pamphlets to be used in the main study so as to help ensure that the cost

manipulation would be more explicitly effective.

Prior Attitudes

The fifth reason for conducting the pilot tests was to ascertain what women's attitudes towards BSE were prior to the experiment. The two questions of interest were 1) "How enjoyable is it to perform BSE?" (response options ranging from "1" to "7," "1" being "unenjoyable" and "7" being "enjoyable") and 2) "How beneficial is it to perform BSE?" (response options ranging from "1" to "7," "1" being "harmful" and "7" being "beneficial"). The experimenter believed that although most women would perceive BSE to be a beneficial act, most women would probably simultaneously perceive BSE to be an either neutral or slightly unenjoyable act. In fact, most women did perceive BSE to be beneficial ($X=6.60$, $N=54$) but not very enjoyable ($X=3.46$, $N=54$). Such prior attitudes were important to ascertain with respect to the balance attempted in the manipulation. That is to say, in constructing the manipulation, the assumption was made that most women perceived BSE to be slightly unenjoyable. Another reason for assessing women's prior attitudes towards BSE was to inspect whether or not such attitudes would have an effect on post-experimental attitudes. Two ANCOVAS were performed on post-experimental attitudes using prior attitudes as covariates. The prior attitudes were treated independently as the "beneficiality" and "enjoyability"

pretest attitude scores were not significantly related to each other ($r=.051$, $p=.356$). The covariates had no effect on the significance of post-experimental attitudes, lending support to the conclusion that prior attitudes had no effect on post-experimental attitudes towards BSE. Because the above results with respect to prior attitudes were conclusive, this measure was not used again at the second pilot test.

Study Hypotheses

The sixth reason for conducting the pilot tests was to observe whether or not the results were in the direction of supporting the study hypotheses. Of special import were the post-experimental attitudes and intentions across the four experimental conditions. In the first pilot study, there was no significant difference among women in the four experimental conditions with respect to attitudes [(two-way interaction: $F=.634$, $(1,50)$, $P=.430$); see Appendix A, Table 16 for mean scores]. Also in the first pilot test, there was a main effect of cost on women's intentions of performing BSE, those women in the low-cost conditions having greater intentions of performing BSE than women in the high-cost conditions [(main effect, Cost: $F=4.27$, $(1,50)$, $P=.044$); see Appendix A, Table 17 for mean scores]. Because it was believed that the manipulation might have been confounded (as discussed earlier) by other pamphlet

contents, changes were made in the pamphlets so as to elicit a greater difference in attitudes and intentions across conditions. In the second pilot test, there was a marginally significant difference among women across conditions with respect to attitudes, women in the loss-framed conditions holding more positive attitudes towards BSE than women in the gain-framed conditions [(main effect, Frame: $F=3.18$, (1,26), $P=.086$); see Appendix A, Table 18 for mean scores]. Also in the second pilot test, however, there was no significant difference among women in the four conditions with respect to intentions [(two-way interaction: $F=.297$, (1,26), $P=.590$); see Appendix A, Table 19 for the mean scores].

Combining the data from the two pilot tests, there was no significant difference among women across conditions with respect to attitudes [(two-way interaction: $F=.48$, (1,80), $p\leq.489$; see Appendix A, Table 20 for mean scores]. This result should be interpreted with great caution as the Attitude index items used for analysis and the study materials in general were not identical for the two pilot tests. Also in combining the data from the two pilot tests, there was no significant difference among women across conditions with respect to intentions [(two-way interaction: $F=.215$, (1,80), $p\leq.644$); see Appendix A, Table 21 for mean scores]. Again, this result should be interpreted with caution as the study materials were not identical for the

two pilot tests.

In order to make the manipulations stronger, two "gain-loss frame" arguments and one "low-high cost" argument were added to the pamphlet in the main study. Although the second pilot test yielded results only partially supportive of the study hypotheses in terms of expected attitudes and intentions, it should be noted that differences in attitudes and intentions across conditions were expected not at the immediate posttest, but mainly at a follow-up.

MAIN STUDY

INTRODUCTION

Having learned from the two pilot tests, the experimenter felt ready to conduct the main study. The main study was very similar to the pilot tests in intent and in procedure.

METHOD

Subjects

One hundred-twenty Loyola undergraduate women, some enrolled in introductory psychology and some recruited on campus, participated in the study. Each subject was randomly assigned to one of four conditions, comprising a 2 X 2 design. The conditions were as follows: a loss-framed, low-cost message condition; a loss-framed, high-cost message condition; a gain-framed, low-cost message condition; and a gain-framed, high-cost message condition.

Materials

The pamphlets administered to subjects were similar to

those distributed by the American Cancer Society (ACS) and the National Cancer Institute (NCI). Following the example of Meyerowitz and Chaiken's (1987) study, pages 1, 3, and 4 were identical for subjects in the four pamphlet conditions. Page 1, titled, "Basic Facts," included the ACS's recommendation that all women perform monthly BSEs and information about the prevalence of breast cancer. Pages 3 and 4 presented information describing when and how to do BSE.

Page 2 differed for the four pamphlet conditions. For gain- and loss-frame subjects, this page contained six arguments supporting the importance of performing BSE. Although factually equivalent, these arguments were framed in terms of either the positive consequences of doing BSE (gain conditions) or the negative consequences of not doing BSE (loss conditions). For low- and high-cost subjects, this page contained four additional statements indicating the amount of effort and time needed to perform BSE. For the low-cost subjects, these statements stressed the minimal time and effort required of women in performing BSE. For the high-cost subjects, these statements stressed a somewhat greater amount of time and effort required by women than was stressed for the low-cost subjects. (See Appendix C for "Page 2" for the different conditions). The pamphlet arguments were presented in the same order for all subjects.

Measures were administered at two times after the

pamphlets were administered.

Procedure

Women in each condition were told that the materials they received constituted a "health attitudes" study, and that the study was meant to concentrate on breast cancer and breast self-examination.

Prior to receiving the pamphlets, subjects received a pretest embedded with questions related to their attitudes towards performing BSEs (See APPENDIX B for study measures). Immediately after receiving the pamphlets and at a three-month follow-up, subjects in the four pamphlet conditions received the study measures listed in the Pilot Tests Procedure section. In addition to those measures, at a follow-up, subjects were asked about their performance of BSE. It should be noted that although the substantive content of the questionnaires received by subjects at the two posttests was the same, there were subtle differences in wording due to the nature of the posttests (the first required self-administered interviews and the second required telephone interviews).

The primary intent of the second measure (see Pilot Tests Procedure section), the cognitive responses, was to investigate the influence of cognitive responses as a mediating variable on subjects' subsequent attitudes, intentions, and behaviors. That is, did the condition to

which one was assigned determine in part a subject's cognitive responses, and did those responses determine in part a subject's subsequent attitudes, intentions, and behaviors? A secondary intent of this measure's use was to note whether or not subjects' responses provided support for the experimenter's hypotheses. For example, at the first posttest, a response similar to "I've got too many things to live for," might have been a sign of reactance, as a response similar to "I have nothing to worry about," might have been a sign of an illusion of control. At follow-up, a response similar to "I can't do anything to offset breast cancer" might have been a sign of helplessness.

After the subjects completed the questionnaires, they were thanked for taking part in the study and were encouraged to ask any questions they might have. Further, the subjects were told that they would be given more information about the study after the follow-up.

At the follow-up, subjects were contacted by telephone to ensure their convenience. To maximize response rate, subjects were told at the first posttest that they would be called in about eight weeks. The response rate at the follow-up was 88% (98/112) and the dropout rate was not significantly different across conditions (4-LFLC; 2-GFLC; 4-LFHC; and 4-GFHC). The follow-up included the exact measures included at the first posttest.

After completing the follow-up, subjects were

debriefed. They were told, specifically, that the study's purpose was to assess the effects of gain- vs. loss-framed and low-vs. high-cost messages in the context of BSEs in particular, and in the context of health detection measures in general. Also, the subjects were told that the results of the study would be sent to them upon request.

Furthermore, they were told that if they had any questions or concerns, they should feel free to contact the researcher at any time. Finally, the subjects were greatly thanked for their contribution to the study in particular and to social science in general.

MAIN STUDY RESULTS

Manipulation Checks

At the first and second posttests, the manipulations, as checked by subjects' pamphlet argument recall, were successful. Furthermore, there was no evidence of potential confounds as there was at the pilot tests. At the first and second posttests, subjects in the gain-framed conditions reported arguments in gain language statistically significantly more often than did subjects in the loss-framed conditions [(posttest 1 main effect: $F=46.229$, $(1,101)$, $p \leq .0001$); (posttest 2 main effect: $F=40.385$, $(1,90)$, $p \leq .0001$); see Appendix A, Table 22 for mean scores at both posttests]. Likewise, subjects in the loss-framed conditions reported arguments in loss language significantly more often than did subjects in the gain-framed conditions [(posttest 1 main effect: $F=31.360$, $(1,101)$, $p \leq .0001$); (posttest 2 main effect: $F=77.614$, $(1,90)$, $p \leq .0001$); see Appendix A, Table 23 for mean scores at both posttests]. Finally, subjects in the low-cost conditions reported arguments in terms of low cost significantly more often than did subjects in the high-cost conditions at the first

posttest but not at the second posttest [(posttest 1 main effect: $F=7.554$, (1,101), $p \leq .007$); (posttest 2 main effect: $F=1.000$, (1,90), $p \leq .320$); see Table 24 for mean scores at both posttests]. As in the first pilot study, no subjects reported arguments in terms of high cost at the first or second posttests. Noted should be the fact that although there was very little incorrect recall (of arguments not heard), the correct recall was somewhat low (gain-framed, posttest 1: 1.9/6; gain-framed, posttest 2: 1.1/6; loss-framed, posttest 1: .81/6; loss-framed, posttest 2: .74/6; low-cost, posttest 1: .25/6; and low-cost, posttest 2: .02/6). Noted also should be the fact that although only one person coded the recall of pamphlet arguments, the coding was probably not biased given its straightforwardness and the blindness of the coder with respect to subject conditions.

Cognitive Responses

As done in the pilot tests, an attempt was made at both posttests to determine what, if any, relationships existed between the cognitive responses and subsequent attitudes and intentions via two chi-squares and two one-way ANOVAs. The first chi-square examined the effects of frame and cost manipulations on the favorability of cognitive responses. The number of people at each posttest who had favorable, unfavorable, or neutral responses are shown in

Appendix A, Table 25. Combining the data from both posttests, 8% of the women had favorable cognitive responses, 6% had unfavorable cognitive responses, and 86% had neutral cognitive responses. From the nonsignificance of the chi-square, it is evident that the manipulations had no effect on the favorability of cognitive responses. In fact, the majority of women reported neutral cognitive responses.

The second chi-square examined the effects of the frame and cost manipulations on the source of cognitive responses. The number of people at each posttest who gave "message," "issue," or "message and issue" responses are shown in Appendix A, Table 26. Again, combining the data from both posttests, 17% of the women gave "message" cognitive responses, 70% gave "issue" cognitive responses, and 13% gave "message and issue" cognitive responses. From the nonsignificance of the chi-square, it is evident that the manipulations had no effect on the source of cognitive responses. In fact, the majority of women gave "issue" cognitive responses.

The first ANOVA examined the effects of the favorability and source of cognitive responses on BSE attitudes. There was no significant difference at either posttest across conditions [(posttest 1 two-way interaction: $F=1.727$, (3,87), $p \leq .167$); (posttest 2 two-way interaction: $F=1.816$, (3,80), $p \leq .151$); see Appendix A, Table 27 for mean

scores at both posttests], indicating that favorability and source of cognitive responses had no effect on BSE attitudes. These results should be interpreted with caution as there were very small numbers of people who gave favorable and unfavorable responses.

The second ANOVA examined the effects of the favorability and source of cognitive responses on BSE intentions. There was no significant difference at either posttest across conditions [(posttest 1 two-way interaction: $F=.938$, (3,92), $p\leq.426$); (posttest 2 two-way interaction: $F=1.023$, (3,80), $p\leq.387$); see Appendix A, Table 28 for mean scores at both posttests], indicating that favorability and source had no effect on BSE intentions. Again, these results should be interpreted with caution as there were very small numbers of people who gave favorable and unfavorable responses.

Attitudes

At the first posttest, there was no statistically significant difference across the four conditions with respect to women's attitudes towards performing breast self-exams [(two-way interaction: $F=1.58$, (1, 103), $p\leq.212$); see Table 2 for mean scores at both posttests]. The mean attitude score was, however, relatively high as expected (range from 71.73 (5.12/7 per attitude item) for the gain-framed, low-cost condition to 76.75 (5.46/7 per attitude

item) for the loss-framed, low-cost condition out of a possible "98.00" total). At the second posttest, there was an unexpected statistically significant main effect difference ($F=7.086$, $(1,91)$ $p \leq .009$) such that the high-cost conditions had more favorable attitudes towards performing breast self-exams than did the low-cost conditions, the expectation being that the low-cost conditions, and especially the loss-framed, low-cost condition, would have the most positive attitudes. There also evinced a slight "sleeper effect" for all but the loss-framed, low-cost condition, this effect being especially present for the loss-framed, high-cost condition, such that women in these conditions had more positive attitudes at the second posttest than they had at the first posttest.

Table 2. Mean scores of BSE attitudes as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1			POSTTEST 2		
	LOW- COST	HIGH- COST		LOW- COST	HIGH- COST	
LOSS- FRAME	76.75 N=28	75.00 N=26	75.91 N=54	75.04 N=24	83.23 N=22	78.96 N=46
GAIN- FRAME	71.73 N=26	75.70 N=27	73.75 N=53	73.84 N=25	78.08 N=24	75.92 N=49
	74.33 N=54	75.36 N=53		74.43 N=49	80.54 N=46	

Intentions

At the first posttest, there was no statistically significant difference across the four conditions with respect to women's intentions of performing breast self-exams in the future [(2-way interaction: $F=.084$, (1,108), $p\leq.775$); see Table 3 for mean scores at both posttests]. The mean intention score was, however, relatively high as expected (range from 5.57/7 for the loss-framed, high-cost condition to 5.82/7 for the gain-framed, high-cost condition). At the second posttest, the main effect for the Frame condition was statistically significant ($F=4.542$, $p\leq.04$) and the main effect for the Cost condition was marginally statistically significant ($F=2.844$, $p\leq.10$), such that the gain-framed conditions and the high-cost conditions had greater intentions of performing BSEs than did the loss-framed conditions and the low-cost conditions, respectively. Both of these findings were contrary to expectations, those being that the low-cost conditions and especially the loss-framed, low-cost condition would have the greatest intentions of performing BSEs. Also, there again evinced a slight "sleeping effect" for all but the loss-framed, low-cost condition, such that women in those three conditions had greater intentions of performing BSEs at the second posttest.

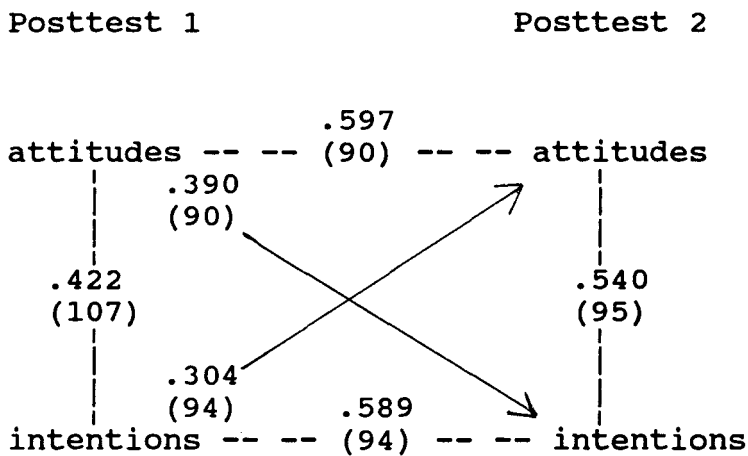
Table 3. Mean scores of BSE intentions as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1			POSTTEST 2		
	LOW- COST	HIGH- COST		LOW- COST	HIGH- COST	
LOSS-	5.64	5.57	5.61	5.29	5.86	5.56
FRAME	N=28	N=28	N=56	N=24	N=22	N=46
GAIN-	5.75	5.82	5.79	5.96	6.21	6.08
FRAME	N=28	N=28	N=56	N=25	N=24	N=49
	5.70	5.70		5.63	6.04	
	N=56	N=56		N=49	N=46	

In an attempt to better understand the relationship between attitudes and intentions at both posttests and also to give closer examination to two of the main variables in the study, cross-lagged correlations were conducted. All of the correlations were greater than .30 and all were significant (See Table 4 below for correlations). The highest correlations were between Posttest 1 and Posttest 2 attitudes and between Posttest 1 and Posttest 2 intentions, possibly signifying the strong reliabilities of the attitudes and intentions measures. Also, the correlation between attitudes and intentions was greater at Posttest 2 than it was at Posttest 1, although the increase is probably not a significant one. Finally, the correlation between Posttest 1 attitudes and Posttest 2 intentions was slightly

but not significantly greater than the correlation between posttest 1 intentions and Posttest 2 attitudes, such that no conclusions can be drawn with respect to one measure's scores being causally related to the other measure's scores.

Table 4. Cross-lagged correlations of Posttest 1 and Posttest 2 attitudes and intentions.



Note: All r 's: $p \leq .0001$.

Self-efficacy

At the first posttest, there was no statistically significant difference across the four conditions with respect to self-efficacy in performing breast self-exams [(two-way interaction: $F=.001$, (1,106), $p \leq .980$); see Appendix A, Table 29 for mean scores at both posttests]. The mean self-efficacy score was, however, relatively high

as expected (range from 10.29 (5.14/7 per self-efficacy item) for the loss-framed, low-cost condition to 11.37 (5.68/7 per self-efficacy item) for the gain-framed, high-cost condition out of a possible "14.00" total). At the second posttest, there was a statistically significant main effect difference ($F=7.115$, (1,91), $p \leq .009$) such that the high-cost conditions reported a greater sense of self-efficacy than did the low-cost conditions. This finding was contrary to the expectation that the low-cost conditions and especially the loss-framed, low-cost group would have the highest perceived self-efficacy. Also noteworthy is the finding that for all conditions, the self-efficacy scores were higher at the second posttest than they were at the first posttest.

PSYCHOLOGICAL PROCESSES

Reactance

Women in the loss-framed conditions were expected to experience reactance at the time of the first posttest and women in the loss-framed, low-cost condition were expected to continue to experience reactance at the second posttest. Four measures of reactance will be discussed in turn to determine whether or not these expectations were met.

First, subjects experiencing reactance should have given statistically significantly more cognitive responses reflecting anger and hostility than subjects not

experiencing reactance. Virtually no one, however, at either posttest, reported such responses.

Second, subjects experiencing reactance should have had statistically significantly higher scores on the MHLC Internal subscale than subjects not experiencing reactance. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main effect: $F=.815$, (1,107), $p\leq.369$); see Appendix A, Table 30 for mean scores at both posttests] and at the second posttest, too, there was no statistically significant difference between the loss-framed, low-cost condition and the other conditions with respect to these scores (two-way interaction: $F=.777$, (1,91), $p\leq.38$).

Third, subjects experiencing reactance should have had statistically significantly lower scores on the "Reactance" index, Part A (See Appendix B) than subjects not experiencing reactance. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main effect: $F=.713$, (1,103), $p\leq.401$); see Appendix A, Table 31 for mean scores at both posttests] and at the second posttest, there was no statistically significant difference between the loss-framed, low-cost condition and the other conditions (two-way interaction: $F=.262$, (1,91), $p\leq.610$).

Fourth, subjects experiencing reactance should have had statistically significantly higher scores on the "Reactance" index, Part B (See Appendix B) than subjects not experiencing reactance. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main-effect: $F=.096, (1,105), p\leq.758$); see Appendix A, Table 32 for mean scores at both posttests] and at the second posttest, there was no statistically significant difference between the loss-framed, low-cost condition and the other conditions (two-way interaction: $F=1.787, (1,91), p\leq.185$).

Following these individual analyses, an overall analysis was performed on the three relevant measures of reactance combined. After reverse-scoring the items on the "Reactance" index, Part A and transforming the MHLC Internal scores, the "Reactance" index, Part A scores, and the "Reactance" index, Part B scores to Z-scores, correlations among the three measures were computed for both posttests (See Appendix A, Table 33). Not having full justification for combining these three measures into one total "Reactance" score based on their intercorrelations, no such score was computed and no further analyses were done with respect to the Reactance measures.

Illusion of Control

Women in the gain-framed conditions were expected to experience an illusion of control at the time of the first posttest and women in the gain-framed, low-cost condition were expected to continue to experience an illusion of control at the second posttest. Four measures of an illusion of control will be discussed in turn to determine whether or not these expectations were met.

First, subjects experiencing an illusion of control should have given statistically significantly more cognitive responses reflecting this process than subjects not experiencing an illusion of control. Virtually no one, however, at either posttest, reported such responses.

Second, subjects experiencing an illusion of control should have had statistically significantly lower scores on the item reflecting breast cancer susceptibility than subjects not experiencing an illusion of control. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main-effect: $F=1.038$, (1,107), $p \leq .310$); see Appendix A, Table 34 for mean scores at both posttests] and at the second posttest, there was no statistically significant difference between the gain-framed, low-cost condition and the other conditions (two-way interaction: $F=.677$, (1,91), $p \leq .413$).

Third, subjects experiencing an illusion of control should have had statistically significantly higher scores on

the items reflecting BSE efficacy than subjects not experiencing an illusion of control. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main-effect: $F=.427$, (1,108), $p\leq.515$); see Appendix A, Table 35 for mean scores at both posttests] and at the second posttest, there was no statistically significant difference between the gain-framed, low-cost condition and the other conditions (two-way interaction: $F=.620$, (1,91), $p\leq.433$).

Fourth, subjects experiencing an illusion of control should have had statistically significantly higher scores on the "Illusion of Control" index than subjects not experiencing an illusion of control. At the first posttest, however, there was no statistically significant difference between the gain- and loss-framed conditions with respect to these scores [(Frame main-effect: $F=.659$, (1,96), $p\leq.419$); see Appendix A, Table 36 for mean scores at both posttests]. At the second posttest, there was a statistically significant Cost main effect difference ($F=4.670$, (1,89), $p\leq.033$), such that women in the low-cost conditions had scores exhibiting a greater degree of an illusion of control than did women in the high-cost conditions. The expectation, however, was that only women in the gain-framed, low-cost condition would have higher scores than women in other conditions on this index.

Following these individual analyses, an overall analysis was performed on the three relevant measures of illusion of control. After reverse-scoring the item reflecting breast cancer susceptibility and transforming that item, the items reflecting breast self-exam efficacy, and the Illusion of Control index scores to Z-scores, correlations among the three measures were computed for both posttests (See Appendix A, Table 37). Not having full justification for combining these three measures into one total "Illusion of Control" score based on their intercorrelations, no such score was computed and no further analyses were done with respect to the Illusion of Control measures. As in the Reactance analyses, no analysis lent support to the expectation that subjects in the gain-framed conditions would experience a greater degree of illusion of control at the first posttest or that subjects in the gain-framed, low-cost conditions would experience a greater degree of illusion of control than subjects in the other conditions at the second posttest.

Helplessness

Women in the high-cost conditions were expected to experience helplessness at the time of the second posttest. Four measures of helplessness will be discussed in turn to determine whether or not these expectations were met.

First, subjects experiencing helplessness should have

given statistically significantly more cognitive responses reflecting discouragement and loss of hope than subjects not experiencing helplessness. Virtually no one, however, reported such responses.

Second, subjects experiencing helplessness should have had statistically significantly lower scores on the MHLC Internal subscale than subjects not experiencing helplessness. At the second posttest, however, there was no statistically significant difference between the high- and low-cost conditions with respect to these scores [(Cost main effect: $F=.141, (1,91), p\leq.708$); see Appendix A, Table 30 for mean scores].

Third, subjects experiencing helplessness should have had statistically significantly higher scores on the "Reactance" index, Part A than subjects not experiencing helplessness. At the second posttest, however, there was no statistically significant difference between the high- and low-cost conditions with respect to these scores [(Cost main effect: $F=1.673, (1,91), p\leq.199$); see Appendix A, Table 31 for mean scores].

Fourth, subjects experiencing helplessness should have had statistically significantly lower scores on the "Reactance" index, Part B than subjects not experiencing helplessness. At the second posttest, however, there was no statistically significant difference between the high- and low-cost conditions with respect to these scores [(Cost main

effect: $F=.104$, (1,91), $p\leq.747$); see Appendix A, Table 32 for mean scores].

ALTERNATIVE EXPLANATIONS

Negativity Bias

Meyerowitz and Chaiken (1987) claim to have ruled out the effect of a "negativity bias" - the finding that negative information exerts a greater judgmental impact than objectively equivalent positive information (e.g., Anderson, 1965) - on their results. To test a potential effect of a negativity bias on the present results, a t-test was performed to determine if women in the loss-framed conditions recalled loss-framed arguments statistically significantly more often than women in the gain-framed conditions recalled gain-framed arguments. There was an opposite statistically significant difference at the first posttest [$t=-4.828$, (103), $p\leq.005$,); see Appendix A, Table 38 for mean scores at both posttests] and at the second posttest ($t=-2.938$, (92), $p\leq.005$), such that women in gain-framed conditions reported arguments in gain-framed language more frequently than women in loss-framed conditions reported loss-framed arguments, a result opposite of what the negativity bias would predict. Noted, however, should be the idea that recall does not necessarily have an impact on attitudes.

Fearful Content

Meyerowitz and Chaiken (1987) also claim to have ruled out the notion that their negative message was confounded by its fearful content, as high-fear appeals have generally been found to be more persuasive than low-fear appeals (e.g., Higbee, 1969). To test this potential confounding in the present study, subjects' cognitive responses were coded for reflections of fear. At the first posttest, there was no statistically significant difference between the gain- and loss-framed conditions with respect to the number of times subjects mentioned being scared by their respective messages [(main effect, Frame: $F=.541$, (1,99), $p\leq.464$); see Appendix A, Table 39 for mean scores at both posttests], seeming to rule out the confounding of negative content and fear. There was, however, a marginally significant difference between the low- and high-cost conditions, those women in the low-cost conditions reporting greater fear than those women in the high-cost conditions ($F=3.392$, (1,99), $p\leq.068$). At the second posttest also, there was no statistically significant difference between the gain- and loss-framed conditions with respect to the number of times subjects mentioned being scared by their respective messages (main effect, Frame: $F=2.061$, (1,91), $p\leq.160$). The main effect of the Cost manipulation, found at the first posttest, was not replicated. To be stressed with respect to these analyses should be the very small number of times subjects mentioned being scared.

Protection Motivation Theory Variables

Meyerowitz and Chaiken (1987) attempted to rule out the possibility that between the gain- and loss-framed conditions, women's attitudes and behaviors may have been affected via the influence of one or more variables given importance as predictors of health behavior within protection motivation theory (Rogers, 1975, 1983; Rogers & Mewborn, 1976). Those variables are perceived severity (of breast cancer), perceived susceptibility (to breast cancer), perceived efficacy (of BSE), and perceived self-efficacy (in performing BSE). As the last was found to differentiate between women in the gain- and loss-framed conditions in Meyerowitz and Chaiken's (1987) study, it was found to differentiate between women in the low- and high-cost conditions at the second posttest of this study [$F=7.115$, $(1,91)$, $p \leq .009$]; see Table 29, Posttest 2 results] such that women in the high-cost conditions reported a greater sense of self-efficacy with respect to performing BSEs than did women in the low-cost conditions. All of the other protection motivation theory variables failed to differentiate among the conditions in this study [((perceived severity of breast cancer: posttest 1 two-way interaction: $F=.009$, $(1,106)$, $p \leq .923$; posttest 2 two-way interaction: $F=.337$, $(1,91)$, $p \leq .563$), see Table 40 for mean scores at both posttests); ((perceived susceptibility to breast cancer: posttest 1 two-way interaction: $F=.533$,

(1,107), $p \leq .467$; posttest 2 two-way interaction: $F = .677$, (1,91), $p \leq .410$), see Table 34 for mean scores at both posttests); ((perceived efficacy of BSE: posttest 1 two-way interaction: $F = .230$, (1,108), $p = .633$; posttest 2 two-way interaction: $F = .620$, (1,91), $p \leq .430$), see Table 35 for mean scores at both posttests); and ((perceived self-efficacy: posttest 1 two-way interaction: $F = .001$, (1,91), $p \leq .980$; posttest 2 two-way interaction: $F = .428$, (1,91), $p \leq .515$), see Table 29 for mean scores at both posttests)]).

BSE Performance

Performance of BSEs was determined by subjects' answers to three questions: 1) How many times, since you read the pamphlet on breast self-exams, did you perform a breast self-exam?; 2) How careful were you each time you performed a breast self-exam?; and 3) How thorough were you each time you performed a breast self-exam?. The last two questions had response options that ranged from "1," or "not at all (careful) (thorough)" to "5," or "extremely (careful) (thorough)." A "total" performance score was calculated by weighting the number of times a subject performed a breast self-exam by "2" and adding that number to the numbers assigned to the "careful" and "thorough" questions. There was a marginally statistically significant two-way interaction ($F = 3.028$, (1,91), $p \leq .084$; see Table 5 for mean scores) and a marginally statistically significant main

effect difference for the Cost condition ($F=3.126$, $(1,91)$, $p \leq .080$) such that women in the high-cost conditions had higher scores on the BSE Performance index than did women in the low-cost conditions, and women in the high-cost, loss-framed condition had the highest scores on the index. The expectation that women in the loss-framed, low-cost condition would have the highest BSE Performance index scores was not met; in fact, women in this condition had the lowest scores.

Table 5. Mean scores of computed BSE Performance Index as a function of condition.

	LOW- COST	HIGH- COST	
LOSS- FRAME	4.81 N=24	8.77 N=22	6.70 N=46
GAIN- FRAME	6.72 N=25	6.81 N=24	6.76 N=49
	5.78 N=49	7.75 N=46	

Reported below is the average number of times women performed breast self-exams. There were no statistically significant differences across conditions with respect to this number (two-way interaction: $F=2.321$, $(1,91)$, $p \leq .131$); see Table 6 for mean scores). Again, the expectation that women in the loss-framed, low-cost condition would perform BSEs most often was not met; in fact, women in this

condition performed BSEs the least often.

Table 6. Mean scores of BSE performance as a function of condition.

	LOW- COST	HIGH- COST	
LOSS- FRAME	.88 N=24	1.77 N=22	1.31 N=46
GAIN- FRAME	1.40 N=25	1.42 N=24	1.41 N=49
	1.15 N=49	1.59 N=46	

In an attempt to understand with a broad perspective what variables were most highly related to and contributing most to BSE performance, two analyses were performed. First, correlations were done among BSE performance index scores and variables measured at the first and second posttests. Second, using BSE performance index scores as a dependent variable and Posttest 1 variables most highly related to those scores as independent variables, a regression analysis was performed.

The correlation matrix (see Table 7 below) comprises only those variables that were significantly related ($p \leq .05$) to the BSE performance index scores. Those variables were as follows: BSE attitudes (Posttests 1 and 2); BSE intentions (Posttests 1 and 2); self-efficacy (Posttests 1 and 2); perceived severity of breast cancer (Posttests 1 and

2); and perceived efficacy of BSE (Posttests 1 and 2). other variables included in the correlation analysis and not significantly related to BSE performance index scores (at either posttest) were as follows: breast cancer susceptibility, Reactance index A, Reactance index B, Illusion of Control index, MHLC Internal subscale, MHLC Powerful Others subscale, and MHLC Chance subscale.

Table 7. Correlations between BSE Performance Index scores and Posttest 1 and Posttest 2 variables.

	<u>ATT1</u>	ATT2	<u>INT1</u>	INT2	<u>SE1</u>	SE2	<u>SV1</u>	SV2	<u>EFF1</u>	EFF2
PS	.264	.381	.350	.451	.246	.256	.188	.263	.184	.301
	(91)	(93)	(95)	(93)	(93)	(93)	(93)	(93)	(95)	(93)
≤:	.006	.000	.000	.000	.009	.007	.035	.005	.037	.002

Note: ≤ indicates $p \leq$.

Underlined in Table 7 are those variables used in the regression analysis to predict BSE performance index scores. In view of the experimenter's uncertainty as to what variables would best predict BSE performance index scores and also of the exploratory nature of these analyses, a stepwise regression analysis was performed. The results from this analysis showed that both BSE intentions and perceived efficacy of BSE were significant predictors of BSE performance index scores (See Table 8 below).

Table 8. Results of a stepwise regression analysis using BSE Performance Index scores as the dependent variable.

variables in the Equation

Variable	B	SE B	Beta	T	Sig T
BSE intentions	1.47	.455	.323	3.24	.0017
BSE efficacy	.595	.286	.207	2.08	.0408

Variables not in the Equation

Variable	Beta In	Partial	Min	Toler T	Sig T
BSE attitudes	.094	.088	.734	.805	.4229
Self efficacy	.113	.117	.903	1.082	.2823
BC severity	.041	.041	.864	.378	.706

Curiously, perceived efficacy of BSE scores were not different across conditions, i. e., the high-cost conditions, whose subjects had higher scores on the BSE performance index did not also have higher scores on the perceived efficacy of BSE items. Also noteworthy was the inability of BSE attitude scores to predict BSE performance index scores; BSE intention scores were a more powerful predictor. Finally, the inability of perceived self-efficacy scores to predict BSE performance index scores was somewhat surprising given their difference across conditions, i.e., subjects in high-cost conditions had higher BSE performance index scores and higher-self-efficacy scores than did subjects in low-cost conditions but self-efficacy scores could not predict the former. To be noted,

however, is the notion that a regression analysis using independent variables from Posttest 2 might result in different predictors than did the present one.

Pamphlet Impact

Mainly as a descriptive effort, women were asked at the second posttest some questions related to how much they felt participating in the study affected their attitudes towards breast self-exams and towards breast cancer. Eleven such questions, whose response options ranged from "1," or "not at all" to "5," or "very, very much," made up this "Pamphlet Impact" index. There were no statistically significant differences (two-way interaction: $F=.000$, (1,90) $p\leq.982$; see Table 41 for mean scores) among the four conditions with respect to their totals on this index. The grand mean was 24.63, yielding an average of 2.24/5 for each item, an average reflecting a response between "not much" and "somewhat".

Dividing the Pamphlet Impact questions into those related to breast self-exams and those related to breast cancer, there were no statistically significant differences among the four groups ((BSE questions, two-way interaction: $F=.082$, (1,90), $p\leq.775$; BC questions, two-way interaction: $F=.131$, (1,90), $p\leq.718$); see Tables 42 and 43 for mean scores).

DISCUSSION

Manipulation Checks

A logical topic with which to begin a discussion of study results seems to be whether or not the manipulations were successful. In the present study, they were in one respect. At the first pilot test and at the first and second posttests, subjects in gain-framed conditions recalled arguments in gain language significantly more often than did subjects in loss-framed conditions, subjects in loss-framed conditions reported arguments in loss language significantly more often than did subjects in gain-framed conditions, and subjects in low-cost conditions reported arguments in terms of low cost significantly more often than did subjects in high-cost conditions. Virtually no one, at any of the tests, however, reported arguments in terms of high-cost. Possibly, this lack of reporting was due to the non-straightforwardness of high-cost messages, as they conveyed high-cost implicitly rather than explicitly. Such implicitness was important with respect to the ethical issue of stating in a blunt manner that breast self-exams are extremely difficult and time-consuming when in fact the

opposite is true.

Although the gain-frame, loss-frame, and low-cost manipulations did appear successful overall, there were some concerns of confounding of manipulations at the pilot test, such that subjects in low-cost conditions reported arguments in gain language more often than did subjects in high-cost conditions, subjects in high-cost conditions reported arguments in loss language more often than did subjects in low-cost conditions, and subjects in the loss-framed, low-cost condition reported arguments in terms of low cost more often than did subjects in the other conditions. These effects, however, were not found again at the first or second posttests, leading the experimenter to believe that the effects were not reliable and were possibly due to the unrefined pamphlet that was improved on with respect to wording that might possibly confound conditions.

The low recall of cost arguments in general (low-cost arguments were seldom recalled as were high-cost ones) might be due to subjects' interpretation of the word "argument." A statement stressing the importance of doing BSEs (a "frame" argument) probably resembles an argument more than does a statement stressing the minimal amount of time required to perform BSEs.

Also noteworthy with respect to argument recall was that subjects in gain-framed conditions reported arguments in gain language more often than subjects in loss-framed

conditions reported arguments in loss language. This effect might be due to the greater ease in remembering gain-framed arguments, as the loss-framed arguments were structurally more difficult to remember and recall.

To be noted is that although the manipulation checks were successful overall, the number of arguments recalled was very low. Thus, for some reason (e. g., motivation), subjects did not perform well on the recall task. Possibly, however, they may have correctly perceived the arguments, and there might be other types of manipulation checks to assess the accuracy of subjects' argument perception. For example, after the experiment, the researcher could present subjects with two pages of frame arguments and two pages of cost arguments and then ask subjects to identify which arguments they had in their pamphlets. Another type of manipulation check might be one of perception/evaluation of the messages. For example, a check on the cost arguments might ask how much time and effort is required to do BSE and a check on the frame arguments might ask what the gains or losses of doing or not doing BSE are. These latter kinds of checks on perception might be related to attitudes even though the recall check was not.

Accuracy of Measures

Some of the measures tested for reliability were highly internally reliable, others were acceptably reliable,

and others were borderline reliable. Having addressed the issue of reliability, the question that follows is whether or not the measures were valid. To be discussed further on in the Discussion section is the notion that some of the measures may not have been valid. Of special concern were the Reactance indices, the Helplessness indices, and the Illusion of Control indices. All of those were constructed by the experimenter and were tested for convergent validity. The analyses indicated a lack of validity. Valid measures of these constructs need be developed in future research in order for a better test of these study and other related study hypotheses. Clearly, the interpretation of the current study results needs consider the question of validity with respect to those indices, as their lack of validity might account, in part, for their failure as predicted mediators between message reception and later attitudes, intentions, and behaviors.

Cognitive Responses

In both pilot tests and both posttests, there was no difference across conditions with respect to favorability or source of cognitive responses. In fact, the majority of women at all tests reported "neutral, issue" responses. Such reporting may not warrant great surprise as BSE is probably viewed as neither favorable nor unfavorable and was the topic of the pamphlet.

Combining the data from the two pilot tests, subjects with more favorable cognitive responses were somewhat more likely to have more positive attitudes than were subjects with unfavorable or neutral cognitive responses. This effect, however, was not found again at either posttest. Given the greater number of subjects at the posttests and also the marginality of the pilot test results' significance, the posttest results are probably more trustworthy, lending support to the conclusion that favorability of cognitive responses cannot reliably predict BSE attitudes. Of course, this finding is contrary to other research (e. g., Petty & Cacioppo, 1981) which has found that the favorability of cognitive responses can reliably predict attitudes towards a given attitude object. Possibly, the lack of variation in the cognitive responses (i. e., most responses were "neutral") reported by subjects in this study accounts for their inability to predict BSE attitudes.

In both pilot tests and both posttests, there was no difference across conditions with respect to the effects of favorability and source of cognitive responses on BSE intentions. These results, coupled with the cognitive responses' absence of effect on BSE attitudes lends support to the conclusion that favorability and source of cognitive responses did not predict BSE intentions. Again, however, should be noted the lack of variation in cognitive responses

and hence the possibility that this lack could account for their inability to predict BSE intentions.

Attitudes, Intentions, Self-efficacy, and Behavior

Prior to presenting the results with respect to the main dependent variables, a brief summary of the hypotheses regarding them will be outlined. At the first posttest, all women were expected to have positive BSE attitudes, great intentions of performing BSEs, and high self-efficacy in performing BSEs. At the second posttest, women in the loss-framed, low-cost condition were expected to have the most positive attitudes towards, the greatest intentions of performing, the highest self-efficacy in performing, and to have actually performed BSEs most often, followed by those women in the gain-framed, low-cost condition, followed by those women in the gain-framed, high-cost condition, followed by those women in the loss-framed, high-cost condition.

Having outlined the main study hypotheses, the main dependent variables will be discussed separately and jointly with respect to study findings. At the first posttest, there was no difference across conditions with respect to BSE attitudes, intentions, or self-efficacy. At the second posttest, women in the high-cost conditions had more favorable attitudes towards performing breast self-exams than did women in the low-cost conditions, women in the

gain-framed and high-cost conditions had greater intentions of performing breast self-exams than did women in the loss-framed and low-cost conditions, and women in the high-cost conditions reported a greater sense of self-efficacy in performing breast self-exams than did women in the low-cost conditions, and finally, women in the high-cost conditions, and especially those in the loss-framed, high-cost condition had higher scores on the BSE Performance index than did women in the other conditions.

Due to the observation that at the first posttest there were very few differences across conditions but at the second posttest there were some differences and also to the observation that attitudes and intentions became more favorable and greater, respectively, at the second posttest for women in all but the low-cost, loss-framed condition (and especially more favorable and greater for women in high-cost conditions), a repeated measures MANOVA was performed to test whether or not those differences over time were significant. Results from this analysis showed that women in high-cost conditions changed their attitudes in a positive manner more than did women in low-cost conditions [(Cost by BSE attitudes effect: $F=4.72$, (1,86), $p \leq .033$); see Table 2 for marginal means]; however, this effect must be interpreted with respect to an interaction such that women in high-cost conditions displayed such change only if they were also in the loss-framed condition (Frame by Cost by BSE

attitudes effect: $F=4.72$, $(1,86)$, $p \leq .020$). This finding is strong evidence against the hypothesis that women in the loss-framed, low-cost condition would show the greatest positive change in BSE attitudes and that women in the loss-framed, high-cost condition would show the least. Also from this analysis, results showed that women in gain-framed conditions tended to change their intentions of performing BSE in a greater manner more than did women in loss-framed conditions [(Frame by BSE attitudes effect: $F=2.68$, $(1,90)$, $p \leq .105$); see Table 3 for marginal means]. This finding, too, is contrary to the hypothesis that women in the low-cost, loss-framed condition would show the greatest positive change in their intentions of performing BSEs.

Related to the above analyses are the cross-lagged correlations of attitudes and intentions at Posttest 1 and Posttest 2. Although attitudes and intentions were significantly related to each other at Posttest 1 and Posttest 2, the cross-lagged correlations were somewhat low, indicating that scores on one measure might not reliably predict scores on the other measure. Further related to the repeated measures analysis results was the finding that although Posttest 1 BSE attitude scores and BSE intention scores were significantly related to BSE performance index scores, only BSE intention scores were reliable predictors of BSE performance index scores. Possibly, BSE attitudes and BSE intentions operate via different processes both in

the way they are affected by differently-framed messages and in the way they affect behavior with respect to those messages.

In sum, although no differences were found across conditions on the major dependent variables at the first posttest, no differences were expected at this time due to the belief that all women, regardless of condition, would be highly motivated immediately after receiving their pamphlets. As expected, differences were found at the second posttest, but those differences were contrary to study expectations. The major commonality among the findings was that women in the high-cost conditions had the most favorable attitudes towards breast self-exams, the greatest intentions of performing breast self-exams, the highest self-efficacy with respect to breast self-exams, and the highest scores on the BSE Performance index. Possibly, these findings could find partial explanation in Cognitive Dissonance theory (Festinger, 1957) or other cognitive consistency theories that view people as rational thinkers. In line with such theories, women exposed to the message that performing BSEs will require a great deal of time and effort might come to believe that such performance must be very important and worthwhile. Or, put another way, given the assumption that most people believe that important matters (e.g., breast cancer) require great effort (i. e., high-cost behavior), the high-cost message might sound more

realistic and accurate to women than the low-cost message. Ironical is the fact that with respect to the matter at hand (BSEs), little time and effort really is all that is required.

Outside of theorizing, a more immediate, empirical question might be, "What study variables best predict BSE performance?". As noted in the Results section, five Posttest 1 variables that had significant correlations with BSE performance index scores were entered into a regression analysis in order to ascertain which of those five (attitudes towards BSE, intentions of performing BSE, perceived self-efficacy in performing BSE, perceived severity of breast cancer, and perceived efficacy of BSE) might best predict BSE performance. Of those variables, only BSE intentions and perceived efficacy of BSE were significant predictors of BSE performance. The weakness of attitudes as a predictor was somewhat surprising, especially given the high correlation between attitudes and intentions at the second posttest (See Table 4). Also surprising was the weakness of perceived self-efficacy as a predictor, especially coupled with the strength of perceived efficacy of BSE as a predictor, i. e., subjects in high-cost conditions had higher BSE performance index scores and higher perceived self-efficacy scores than subjects in other conditions but they did not have higher BSE efficacy scores.

Psychological Processes

Reactance, Illusion of Control, and Helplessness

The conditions expected to undergo the different psychological processes at the two posttests did not do so. The only difference with respect to those processes was at the second posttest, at which time women in the low-cost conditions had higher scores on the Illusion of Control index than women in the high-cost conditions, this finding seeming to be a logical one.

Why women did not undergo the expected processes might be explained in more than one way. First, the indices used to measure those processes might not have been valid. Second, women simply might not have undergone the expected processes. Third, both of those explanations could be true. If there exists the possibility that women in the high-cost conditions underwent cognitive dissonance or some similar process, such a process might have been the one around which to base this study or future studies.

Alternative Explanations

Negativity Bias

As discussed earlier, women in gain-framed conditions reported arguments in gain language significantly more often than women in loss-framed conditions reported arguments in loss language, seeming to rule out the idea that a negativity bias might be confounding study results. Although recall may not be capable of reflecting the

negativity bias, in the context of this study especially, the negativity bias is very unlikely operating given the lack of results to indicate that women in the loss-framed conditions were more positively affected by their messages in terms of breast self-exam attitudes, intentions, self-efficacy, and behavior.

Fearful Content

As noted above, the likelihood that fearful content would be operating is not great given the lack of results to indicate that women in the loss-framed conditions were more positively affected by their messages. In fact, the only difference with respect to fear was at the first posttest, at which time women in the low-cost conditions reported greater fear than did women in the high-cost conditions. Possibly, this finding could be interpreted in terms of consistency theory, such that women told that performing BSEs is neither difficult nor time-consuming might then think that it must be scary. That is to say, women might believe that given the seriousness of breast cancer, any prevention measure must also have some degree of seriousness, if not in the act itself (a high-cost behavior), then in its emotionality (e.g., fear). Or possibly, women exposed to the low-cost message might think that they have been given inaccurate or naive information and resultingly feel scared that they will not be able to

perform BSE properly, i. e., their fear might stem from their lack of self-efficacy.

Protection Motivation Theory Variables

The only protection motivation theory variable that differentiated among women in this study was self-efficacy. As mentioned earlier, women in the high-cost conditions reported a greater sense of self-efficacy with respect to performing BSEs than did women in the low-cost conditions. This finding was discussed above in terms of cognitive dissonance (Festinger, 1957).

An Overview

Quite possibly, this study confronted problems at early phases. The low message argument recall might have indicated a weakness in the success of the manipulation. Also, the lack of validity among the measures intended to represent different psychological processes might have contributed to subjects' seemingly random scores on those measures. Future research certainly need ascertain in a more definite manner that the manipulations are successful and that all study measures are valid. Despite those study problems, there were some differences in some of the subjects' responses across the four conditions. In general, the high-cost message seemed to be more effective than the low-cost message and the loss-framed, low-cost message

seemed to be the least effective, findings contrary to expectations and to Meyerowitz and Chaiken's (1987) results. The present study might suggest limitations on the generalizations those authors made with respect to the greater effectiveness of loss than gain-framed messages. Already proposed was the notion that Cognitive Dissonance theory (Festinger, 1957) and other theories that view people as rational thinkers might help in interpreting the study's unexpected results. More explicitly stated, people exposed to high-cost messages might believe that an act which requires a good deal of time and effort must be an important and worthwhile one moreso than people exposed to messages that stress an act's minimal time and effort. Of course, there exist other types of theories that could contend the ability to interpret the study results. Future studies, then, might posit one or more theories in the context of this or similar studies and attempt to test what theory best explains the study results. Such testing might lead to other studies that attempt to understand what kinds of messages are most effective in promoting positive attitudes, intentions, and behaviors with respect to a given issue.

APPENDIX A

Table 9 . Favorability of cognitive responses as a function of condition, using data from Pilot tests 1 and 2.

	PILOT TEST 1		PILOT TEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	FAV: 0	FAV: 7	FAV: 1	FAV: 1
	UNFAV: 0	UNFAV: 0	UNFAV: 0	UNFAV: 0
	NTRL: 10	NTRL: 7	NRTL: 5	NTRL: 5
GAIN-FRAME	FAV: 1	FAV: 5	FAV: 1	FAV: 0
	UNFAV: 1	UNFAV: 0	UNFAV: 0	UNFAV: 0
	NTRL: 10	NTRL: 7	NTRL: 5	NTRL: 6

Table 10 . Source of cognitive responses as a function of condition, using data from Pilot tests 1 and 2.

	PILOT TEST 1		PILOT TEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	MSSGE: 1	MSSGE: 1	MSSGE: 0	MSSGE: 3
	ISSUE: 12	ISSUE: 10	ISSUE: 4	ISSUE: 1
	MSSGE &	MSSGE &	MSSGE &	MSSGE &
	ISSUE: 1	ISSUE: 4	ISSUE: 2	ISSUE: 2
GAIN-FRAME	MSSGE: 1	MSSGE: 2	MSSGE: 0	MSSGE: 0
	ISSUE: 12	ISSUE: 7	ISSUE: 4	ISSUE: 3
	MSSGE &	MSSGE &	MSSGE &	MSSGE &
	ISSUE: 1	ISSUE: 3	ISSUE: 2	ISSUE: 2

Table 11 . Mean score results of an ANOVA examining the effects of cognitive response favorability and source on BSE attitudes for both Pilot Tests combined, using Attitude index items 1-11 only.

COGNITIVE RESPONSE FAVORABILITY			
	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	70.25 N=4	00.00 N=0	66.00 N=6
ISSUE SOURCE	69.88 N=8	56.00 N=1	67.79 N=39
MESSAGE & ISSUE SOURCE	69.50 N=8	00.00 N=0	63.60 N=10

Table 12 . Mean-score results of an ANOVA examining the effects of cognitive response favorability and source on BSE intentions for both Pilot Tests combined.

COGNITIVE RESPONSE FAVORABILITY			
	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	6.25 N=4	0.00 N=0	5.83 N=6
ISSUE SOURCE	6.00 N=8	6.00 N=1	5.87 N=39
MESSAGE & ISSUE SOURCE	6.25 N=8	0.00 N=0	5.70 N=10

Table 13 . Recall of pamphlet arguments in gain language as a function of condition, using data from Pilot Test 1.

	LOW-COST	HIGH-COST
LOSS-FRAME	1.60 N=15	.87 N=15
GAIN-FRAME	3.00 N=12	2.42 n=12

Table 14 . Recall of pamphlet arguments in loss language as a function of condition, using data from Pilot Test 1.

	LOW-COST	HIGH-COST
LOSS-FRAME	.73 N=15	1.67 N=15
GAIN-FRAME	0.00 N=12	.17 N=12

Table 15 . Recall of pamphlet arguments in terms of low-cost as a function of condition, using data from Pilot Test 1.

	LOW-COST	HIGH-COST
LOSS-FRAME	.40 N=15	.07 N=15
GAIN-FRAME	.00 N=12	.08 N=12

Table 16 . BSE attitudes as a function of condition, using data from Pilot Test 1.

	LOW-COST	HIGH-COST
LOSS-FRAME	69.47 N=15	68.07 N=15
GAIN-FRAME	69.08 N=12	71.00 N=12

Table 17 . BSE intentions as a function of condition, using data from Pilot Test 1.

	LOW-COST	HIGH-COST
LOSS-FRAME	6.20 N=15	5.60 N=15
GAIN-FRAME	6.50 N=12	5.83 N=12

Table 18 . BSE attitudes as a function of condition, using data From Pilot Test 2.

	LOW-COST	HIGH-COST
LOSS-FRAME	83.00 N=8	78.29 N=7
GAIN-FRAME	71.86 N=7	72.50 N=8

Table 19 . BSE intentions as a function of condition, using data from Pilot Test 2.

	LOW-COST	HIGH-COST
LOSS-FRAME	5.50 N=8	6.00 N=7
GAIN-FRAME	5.43 N=7	5.25 N=8

Table 20 . BSE attitudes as a function of condition, using data from Pilot Tests 1 and 2 combined and Attitude index Items 1-11 only.

	LOW-COST	HIGH-COST
LOSS-FRAME	68.61 N=23	66.73 N=22
GAIN-FRAME	65.11 N=19	66.10 N=20

Table 21 . BSE intentions as a function of condition, using data From Pilot Tests 1 and 2 combined.

	LOW-COST	HIGH-COST
LOSS-FRAME	5.96 N=23	5.73 N=22
GAIN-FRAME	6.11 N=19	5.60 N=20

Table 22 . Recall of pamphlet arguments in gain language as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	.68 N=28	.32 N=28	.25 N=24	.41 N=22
GAIN-FRAME	1.81 N=27	2.00 N=25	.96 N=24	1.25 N=24

Table 23 . Recall of pamphlet arguments in loss language as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	.86 N=28	.76 N=25	.75 N=24	.73 N=22
GAIN-FRAME	.04 N=27	.00 N=25	.00 N=24	.00 N=24

Table 24 . Recall of pamphlet arguments in terms of low cost as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	.25 N=28	.08 N=25	.00 N=24	.00 N=22
GAIN-FRAME	.26 N=27	.04 N=25	.04 N=25	.00 N=24

Table 25 . Favorability of cognitive responses as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	FAV: 2	FAV: 3	FAV: 3	FAV: 0
	UNFAV: 3	UNFAV: 1	UNFAV: 0	UNFAV: 1
	NTRL: 20	NTRL: 22	NTRL: 20	NTRL: 21
GAIN-FRAME	FAV: 3	FAV: 1	FAV: 1	FAV: 2
	UNFAV: 1	UNFAV: 2	UNFAV: 3	UNFAV: 0
	NTRL: 22	NTRL: 20	NTRL: 17	NTRL: 20

Table 26 . Source of cognitive responses as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	MSSGE: 4	MSSGE: 2	MSSGE: 3	MSSGE: 6
	ISSUE: 19	ISSUE: 16	ISSUE: 13	ISSUE: 16
	MSSGE & ISSUE: 2	MSSGE & ISSUE: 8	MSSGE & ISSUE: 7	MSSGE & ISSUE: 1
GAIN-FRAME	MSSGE: 4	MSSGE: 1	MSSGE: 9	MSSGE: 4
	ISSUE: 21	ISSUE: 19	ISSUE: 11	ISSUE: 17
	MSSGE & ISSUE: 3	MSSGE & ISSUE: 3	MSSGE & ISSUE: 1	MSSGE & ISSUE: 1

Table 27 . Mean score results of an ANOVA examining the effects of cognitive response favorability and source on BSE attitudes, using data from Posttests 1 and 2.

POSTTEST 1

	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	68.67 N=3	76.67 N=3	88.00 N=3
ISSUE SOURCE	80.40 N=5	76.00 N=4	75.02 N=62
MESSAGE & ISSUE SOURCE	81.00 N=1	0.00 N=0	73.71 N=14

POSTTEST 2

	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	66.67 N=3	76.00 N=3	78.38 N=16
ISSUE SOURCE	82.00 N=2	0.00 N=0	78.73 N=55
MESSAGE & ISSUE SOURCE	90.00 N=1	59.00 N=1	76.57 N=7

Table 28. Mean score results of an ANOVA examining the effects of cognitive response favorability and source on BSE intentions, using data from Posttests 1 and 2.

POSTTEST 1			
	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	7.00 N=3	5.00 N=3	6.33 N=3
ISSUE SOURCE	5.60 N=5	5.75 N=4	5.70 N=66
MESSAGE & ISSUE SOURCE	6.00 N=1	0.00 N=0	5.80 N=15

POSTTEST 2			
	FAVORABLE	UNFAVORABLE	NEUTRAL
MESSAGE SOURCE	5.67 N=3	5.67 N=3	6.13 N=16
ISSUE SOURCE	6.00 N=2	0.00 N=0	5.80 N=55
MESSAGE & ISSUE SOURCE	7.00 N=1	7.00 N=1	5.43 N=7

Table 29. Mean scores of self-efficacy as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	10.29 N=28	10.93 N=27	10.79 N=24	11.91 N=22
GAIN-FRAME	10.75 N=28	11.37 N=27	11.32 N=25	12.00 N=24

Table 30 . Mean scores of the MHLC Internal subscale as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	27.64 N=28	26.89 N=28	27.50 N=24	27.00 N=22
GAIN-FRAME	26.56 N=27	26.68 N=28	25.60 N=25	26.75 N=24

Table 31 . Mean scores of the "Reactance" index, Part A, as function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	39.35 N=26	41.93 N=28	44.58 N=24	46.45 N=22
GAIN-FRAME	38.93 N=27	38.58 N=26	40.08 N=25	44.46 N=24

Table 32 . Mean scores of the "Reactance" index, Part B, as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	59.33 N=27	60.32 N=28	60.71 N=24	58.27 N=22
GAIN-FRAME	57.58 N=27	61.15 N=27	59.32 N=25	60.71 N=24

Table 33. Intercorrelations among MHLC Internal subscale Z-scores, "Reactance" index, Part A Z-scores, and "Reactance" index, Part B Z-scores, using data from Posttests 1 and 2 (P1 and P2).

	MHLCI	REACTA	REACTB
MHLC, INTERNAL SUBSCALE (MHLCI)	P1: 1.0000 (111) P=.	_____	_____
	P2: 1.0000 (95) P=.	_____	_____
REACTANCE INDEX, PART A (REACTA)	P1: .0157 (106) P=.437	P1: 1.0000 (107) P=.	_____
	P2: -.2615 (95) P=.005	P2: 1.0000 (95) P=.	_____
REACTANCE INDEX, PART B (REACTB)	P1: .2622 (108) P=.003	P1: -.1244 (106) P=.102	P1: 1.0000 (109) P=.
	P2: .2226 (95) P=.015)	P2: .0877 (95) P=.199	P2: 1.0000 (95) P=.

Table 34. Mean scores of item reflecting breast cancer susceptibility as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	3.96 N=28	3.46 N=28	3.54 N=24	3.68 N=22
GAIN-FRAME	4.04 N=28	3.89 N=27	3.68 N=25	4.29 N=24

Table 35 . Mean scores of the items reflecting BSE efficacy as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	11.18 N=28	11.29 N=28	11.00 N=24	12.00 N=22
GAIN-FRAME	10.71 N=28	11.21 N=28	11.12 N=25	11.46 N=24

Table 36 . Mean scores of the "Illusion of Control" index as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	24.52 N=25	25.31 N=26	27.59 N=22	23.73 N=22
GAIN-FRAME	26.39 N=23	25.77 N=26	27.36 N=25	24.79 N=24

Table 37. Intercorrelations among Breast Cancer Susceptibility Z-score, BSE efficacy Z-score, and "Illusion of Control" index Z-score, using data from Posttests 1 and 2 (P1 and P2).

	BCSS	BSEEFF	ILLCNTL
BREAST CANCER SUSCEPTIBILITY (BCSS)	P1: 1.0000 (111) P=. P2: 1.0000 (95) P=.	_____	_____
BREAST SELF-EXAM EFFICACY (BSEEFF)	P1: .1223 (111) P=.100 P2: -.2158 (95) P=.018	P1: 1.0000 (112) P=. P2: 1.0000 (95) P=.	_____
ILLUSION OF CONTROL (ILLCNTL)	P1: .1922 (100) P=.028 P2: .0690 (93) P=.256	P1: -.0332 (100) P=.371 P2: -.2138 (93) P=.020	P1: 1.0000 (100) P=. P2: 1.0000 (93) P=.

Table 38. Mean numbers of gain- and loss-framed arguments recalled as a function of respective gain- and loss-framed conditions, using data from Posttests 1 and 2.

	GAIN-FRAMED: # GAIN ARGUMENTS	LOSS-FRAMED: # LOSS ARGUMENTS
POSTTEST 1	1.904 N=52	.811 N=53
POSTTEST 2	1.104 N=48	.739 N=46

Table 39 . Mean scores of cognitive responses reflecting fear as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	.22 N=27	.12 N=26	.08 N=24	.09 N=22
GAIN-FRAME	.19 N=26	.04 N=24	.04 N=25	.00 N=24

Table 40 . Mean scores of perceived severity of breast cancer as a function of condition, using data from Posttests 1 and 2.

	POSTTEST 1		POSTTEST 2	
	LOW-COST	HIGH-COST	LOW-COST	HIGH-COST
LOSS-FRAME	6.18 N=28	6.18 N=28	6.08 N=24	6.14 N=22
GAIN-FRAME	6.08 N=26	6.04 N=28	6.04 N=25	6.38 N=24

Table 41 . Mean total scores of Pamphlet Impact Questionnaire as a function of condition, using data from Posttest 2.

	LOW-COST	HIGH-COST
LOSS-FRAME	26.33 N=24	24.77 N=22
GAIN-FRAME	24.46 N=24	22.96 N=24

Table 42. Mean scores of Pamphlet Impact questions related to breast self-exams, using data from Posttest 2.

	LOW-COST	HIGH-COST
LOSS-FRAME	11.50 N=24	11.09 N=22
GAIN-FRAME	10.79 N=24	10.04 N=24

Table 43. Mean scores of Pamphlet Impact questions related to breast cancer, using data from Posttest 2.

	LOW-COST	HIGH-COST
LOSS-FRAME	12.33 N=24	11.32 N=22
GAIN-FRAME	11.38 N=24	10.88 N=24

APPENDIX B

BSE Attitudes Pretest

For each of the following statements, please place an "X" on the line that indicates the position with which you agree most.

1. I feel that vigorous exercise is:

enjoyable _ _ _ _ _ unenjoyable

2. I believe that vigorous exercise is:

harmful _ _ _ _ _ beneficial

3. I feel that a good night's rest is:

enjoyable _ _ _ _ _ unenjoyable

4. I believe that a good night's rest is:

beneficial _ _ _ _ _ harmful

5. I feel that performing breast self-exams is:

harmful _ _ _ _ _ beneficial

6. I believe that performing breast self-exams is:

unenjoyable _ _ _ _ _ enjoyable

7. I feel that smoking cigarettes is:

enjoyable _ _ _ _ _ unenjoyable

8. I believe that smoking cigarettes is:

beneficial _ _ _ _ _ harmful

9. I feel that eating well-balanced meals is:

unenjoyable _ _ _ _ _ enjoyable

10. I believe that eating well-balanced meals is:

harmful _ _ _ _ _ beneficial

11. I feel that taking care of myself when I am sick is:

beneficial _ _ _ _ _ harmful

12. I believe taking care of myself when I am sick is:

enjoyable _ _ _ _ _ unenjoyable

Measure of Perceived Susceptibility to Breast Cancer

please indicate, on a scale of 1 to 7, the likelihood that
you will get breast cancer.

1

2

3

4

5

6

7

no likelihood

very great
likelihood

Measure of Perceived Severity of Breast Cancer

Please indicate, on a scale of 1 to 7, the extent to which you think that breast cancer is a frightening and dangerous disease.

1	2	3	4	5	6	7
not at all frightening and dangerous						extremely frightening and dangerous

Measure of Beliefs in BSE's Efficacy

Please indicate, on a scale of 1 to 7, the effectiveness of breast self-exams in diagnosing breast cancer.

1 2 3 4 5 6 7

no
effectiveness

very high
effectiveness

Please indicate, on a scale of 1 to 7, the likelihood that breast self-exams can affect one's health.

1 2 3 4 5 6 7

no
likelihood

very great
likelihood

Measure of Perceived Self-Efficacy in Performing BSE

Please indicate, on a scale of 1 to 7, how confident you are that performing a breast self-exam will enable you to detect a lump in your breasts.

1 2 3 4 5 6 7

not at all
confident

extremely
confident

Please indicate, on a scale of 1 to 7, the likelihood that you can learn to perform a breast self-exam effectively.

1 2 3 4 5 6 7

no
likelihood

very great
likelihood

Measure of Cognitive Responses

Often, one reflects on what one is reading. Please write down all the thoughts that occurred to you while reading your pamphlet. Be assured that no thoughts are more valid than other thoughts; all of your thoughts are valuable.

Measure of Pamphlet Argument and Procedure Recall

Please write down the arguments that the pamphlet you read mentioned with respect to the importance of performing breast self-exams. Then, please write down the correct procedure your pamphlet outlined for performing breast self-exams.

Wallston et al. (1978) MHLC Scale, Form A

Please indicate your agreement (disagreement) with each of the following items, "1" being "strongly disagree," and "6" being "strongly agree."

1. If I get sick, it is my own behavior which determines how soon I will get well again.

1	2	3	4	5	6
strongly					strongly
disagree					agree

2. No matter what I do, if I am going to get sick, I will get sick.

1	2	3	4	5	6
strongly					strongly
disagree					agree

3. Having regular contact with my physician is the best way for me to avoid illness.

1	2	3	4	5	6
strongly					strongly
disagree					agree

4. Most things that affect my health happen to me by accident.

1	2	3	4	5	6
strongly					strongly
disagree					agree

5. Whenever I don't feel well, I should consult a medically trained professional.

1	2	3	4	5	6
strongly					strongly
disagree					agree

6. I am in control of my own health.

1	2	3	4	5	6
strongly					strongly
disagree					agree

7. My family has a lot to do with my becoming sick or staying healthy.

1	2	3	4	5	6
strongly					strongly
disagree					agree

8. When I get sick I am to blame.

1	2	3	4	5	6
strongly					strongly
disagree					agree

9. Luck plays a big part in determining how soon I will recover from an illness.

1	2	3	4	5	6
strongly					strongly
disagree					agree

10. Health professionals control my health.

1	2	3	4	5	6
strongly					strongly
disagree					agree

11. My good health is largely a matter of good fortune.

1	2	3	4	5	6
strongly					strongly
disagree					agree

12. The main thing which affects my health is what I myself do.

1	2	3	4	5	6
strongly					strongly
disagree					agree

13. If I take care of myself, I can avoid illness.

1	2	3	4	5	6
strongly					strongly
disagree					agree

14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking care of me.

1	2	3	4	5	6
strongly					strongly
disagree					agree

15. No matter what I do, I'm likely to get sick.

1	2	3	4	5	6
strongly					strongly
disagree					agree

16. If it's meant to be, I will stay healthy.

1	2	3	4	5	6
strongly					strongly
disagree					agree

17. If I take the right actions, I can stay healthy.

1	2	3	4	5	6
strongly					strongly
disagree					agree

18. Regarding my health, I can only do what my doctor tells me to do.

1	2	3	4	5	6
strongly					strongly
disagree					agree

Wallston et al. (1978) MHLC Scale, Form B

Please indicate your agreement (disagreement) with each of the following items, "1" being "strongly disagree" and "6" being "strongly agree."

1. If I become sick, I have the power to make myself well again.

1	2	3	4	5	6
strongly					strongly
disagree					agree

2. Often I feel that no matter what I do, if I am going to get sick, I will get sick.

1	2	3	4	5	6
strongly					strongly
disagree					agree

3. If I see an excellent doctor regularly, I am less likely to have health problems.

1	2	3	4	5	6
strongly					strongly
disagree					agree

4. It seems that my health is greatly influenced by accidental happenings.

1	2	3	4	5	6
strongly					strongly
disagree					agree

5. I can only maintain my health by consulting health professionals.

1	2	3	4	5	6
strongly					strongly
disagree					agree

6. I am directly responsible for my own health.

1	2	3	4	5	6
strongly					strongly
disagree					agree

7. Other people play a big part in whether I stay healthy or become sick.

1	2	3	4	5	6
strongly					strongly
disagree					agree

8. Whatever goes wrong with my health is my own fault.

1	2	3	4	5	6
strongly					strongly
disagree					agree

9. When I am sick, I just have to let nature run its course.

1	2	3	4	5	6
strongly					strongly
disagree					agree

10. Health professionals keep me healthy.

1	2	3	4	5	6
strongly					strongly
disagree					agree

11. When I stay healthy, I'm just plain lucky.

1	2	3	4	5	6
strongly					strongly
disagree					agree

12. My physical well-being depends on how well I take care of myself.

1	2	3	4	5	6
strongly					strongly
disagree					agree

13. When I feel ill, I know it is because I have not been taking care of myself properly.

1	2	3	4	5	6
strongly					strongly
disagree					agree

14. The type of care I receive from other people is what is responsible for how well I recover from an illness.

1	2	3	4	5	6
strongly					strongly
disagree					agree

15. Even when I take care of myself, it's easy to get sick.

1	2	3	4	5	6
strongly					strongly
disagree					agree

16. When I become ill, it's a matter of fate.

1	2	3	4	5	6
strongly					strongly
disagree					agree

17. I can pretty much stay healthy by taking good care of myself.

1	2	3	4	5	6
strongly					strongly
disagree					agree

18. Regarding my health, I can only do what my doctor tells me to do.

1	2	3	4	5	6
strongly					strongly
disagree					agree

Reactance Measure, A Description

The theory of reactance (J. W. Brehm, 1966; S. S. Brehm & Brehm, 1981; Wortman & Brehm, 1975) maintains that several responses can follow a loss of control. The first is hostility or aggressive feelings; this response was tested by observing the cognitive responses of the subjects. The second is direct efforts to restore lost freedoms; this response was tested by inspection of the MHLC scores. Scores for those people experiencing reactance should have been higher on the internal scale than scores for those people not experiencing reactance. The third is changes in perceptions of the outcomes, threatened or arbitrarily eliminated outcomes becoming more attractive and outcomes that remain available losing some of their attraction; this response was tested by the following indices. Subjects experiencing reactance should have had lower scores on the first index and higher scores on the second index than subjects not experiencing reactance.

Reactance Index, Part A

please indicate, by circling the number that most accurately describes your position, how much you value the following ideals, ideals often threatened by having breast cancer, "1" being "not at all value," and "7" being "value very, very much."

1=not at all
2=very little
3=little
4=somewhat
5=pretty much
6=very much
7=very, very much

	not at all						very, very much
1. good health	1	2	3	4	5	6	7
2. relaxation	1	2	3	4	5	6	7
3. a worry-free life	1	2	3	4	5	6	7
4. time for loved ones	1	2	3	4	5	6	7
5. own physical appearance	1	2	3	4	5	6	7
6. sexual identity	1	2	3	4	5	6	7
7. secure financial status	1	2	3	4	5	6	7
8. a long life	1	2	3	4	5	6	7
9. secure employment	1	2	3	4	5	6	7
10. an active lifestyle	1	2	3	4	5	6	7

Reactance Index, Part B

Please indicate, by circling the number that most accurately describes your position, how much the following options, options available to someone with breast cancer, would appeal to you, "1" being, "would not at all appeal to me," and "7" being, "would appeal to me very, very much."

1=not at all
 2=very little
 3=little
 4=somewhat
 5=pretty much
 6=very much
 7=very, very much

	not at all							very, very much
1. having a breast removed	1	2	3	4	5	6	7	
2. writing a book about your experience	1	2	3	4	5	6	7	
3. having radiation or other treatment	1	2	3	4	5	6	7	
4. giving talks to women who have been diagnosed as having breast cancer	1	2	3	4	5	6	7	
5. "helping out" science by trying out new treatments for breast cancer patients	1	2	3	4	5	6	7	
6. having follow-up surgery	1	2	3	4	5	6	7	
7. attending breast cancer patient support groups	1	2	3	4	5	6	7	
8. having reconstructive surgery	1	2	3	4	5	6	7	
9. sharing your experience with significant others	1	2	3	4	5	6	7	
10. working for an organization that does research on breast cancer	1	2	3	4	5	6	7	

Helplessness Measure, A Description

Helplessness (Wortman & Brehm, 1975) is the near opposite of reactance. As such, the responses that were expected to follow from helplessness are the opposite of those that were expected to follow from reactance. The first is helpless feelings; again, this response was tested by observing the cognitive responses of subjects. The second is no direct efforts to restore lost freedoms; this response, too, was tested by inspection of MHLC scores. Scores for those people experiencing helplessness should have been lower on the internal subscale than scores for those people not experiencing helplessness. Third, changes in perceptions of the outcomes would not be expected; this response was tested by the index used for reactance. Subjects experiencing helplessness should have had lower scores on the first part and higher scores on the second part than subjects not experiencing helplessness.

Illusion of Control Measure, A Description

Illusion of control (Langer, 1975) was tested by three expected responses. First, subjects were asked to indicate their perceived susceptibility of getting breast cancer. Subjects experiencing an illusion of control should have perceived themselves to be less susceptible than those people not experiencing an illusion of control. Second, subjects were asked about their beliefs in BSE's efficacy

(The more skill-related cues that are present in a chance situation, the more likely one will manifest an illusion of control (Langer & Roth, 1975; Wortman, 1975)); possibly, subjects experiencing an illusion of control should have paid more attention to such cues, i.e., BSE effectiveness. Subjects experiencing an illusion of control, then, should have rated BSE's efficacy higher than those subjects not experiencing an illusion of control. Third, subjects were given the following list of superstitions associated with breast cancer and were asked to indicate their agreement with the list items (Persons undergoing an illusion of control often maintain superstitious beliefs). Subjects experiencing an illusion of control then, should have had higher scores on the following index than subjects not experiencing an illusion of control.

Illusion of Control Index

Please indicate, on a scale of 1 to 7, how much you agree
(disagree) with the following statements.

- 1=very strongly disagree
2=strongly disagree
3=somewhat disagree
4=neither agree nor disagree
5=somewhat agree
6=strongly agree
7=very strongly agree

1. Amply endowed women have a much higher breast cancer risk than women who are not amply endowed.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

2. If I had a lump in one of my breasts, I would most likely know it.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

3. Women who perform breast self-exams regularly have an increased chance of finding a lump if one is there.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

4. Silicone inserts, used to enlarge the breasts, can increase a woman's breast cancer risk.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

5. Women who have been hit or bumped on a breast have a greater chance of getting breast cancer than women who have had no such injury.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

6. Women who have their doctors show them how to perform breast self-exams are more likely to find a lump if one is there.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

7. As long I eat well and exercise regularly, I don't have to worry too much about getting breast cancer.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

8. If breast cancer does not run in a woman's family, she can feel pretty sure that she won't get it.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

9. Breast cancer is a major cause of illness and death among American women today.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

10. I'm too young to worry about getting breast cancer.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

11. Women who breastfeed their children have a higher chance of getting breast cancer than women who do not breastfeed.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

12. The best way a woman can protect herself from breast cancer is through early detection and prompt treatment.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

Measure of Attitudes towards BSE

Please indicate the extent to which you agree with each of the following statements, "1" being "very strongly disagree," and "7" being "very strongly agree."

1. I think performing a breast self-exam is an act of survival.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

2. Performing breast self-exams is something I should do with no hesitation.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

3. I believe breast self-exams are crucial to breast cancer detection.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

4. I feel breast self-exams are one of many "life or death" health behaviors.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

5. I feel breast self-exams are extremely important in promoting good health.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

6. Performing breast self-exams would make me feel 100% better about my health.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

7. I think the decision to perform breast self-exams is the smartest one a woman could make.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

8. I believe performing breast self-exams would make me feel a great deal safer with respect to my health.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

9. I feel performing breast self-exams is an act in which all women should engage.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

10. Breast self-exams should be performed on an extremely regular basis.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

11. I feel I should perform breast self-exams because I know my body a great deal better than anyone else does.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

12. Women who do not perform breast self-exams are taking a huge risk of getting breast cancer.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

13. I can't imagine not performing breast self-exams.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

14. I feel that performing breast self-exams is the best thing a woman could do for herself.

1 2 3 4 5 6 7

very
strongly
disagree

very
strongly
agree

Measure of Intentions of Performing BSE

Please indicate, on a scale of 1 to 7, the likelihood that you will perform breast self-exams in the future.

1

2

3

4

5

6

7

no
likelihood

very great
likelihood

BSE Performance Index

Please indicate how many times since you read your pamphlet on breast self-exams and filled out the study questionnaire you performed a breast self-exam.

How careful were you each time you performed a breast self-exam?

1	2	3	4	5
not at all careful	not very careful	somewhat careful	very careful	extremely careful

How thorough were you each time you performed a breast self-exam?

1	2	3	4	5
not at all thorough	not very thorough	somewhat thorough	very thorough	extremely thorough

Measure of Pamphlet Impact

1a,b. Since you read the pamphlet on BSE and filled out the questionnaire, how much have you thought about breast self-exams? About breast cancer?

not at	not very	somewhat	pretty	a lot
all	much		much	

2a,b. Since you filled out the questionnaire, how much have you talked about breast self-exams? About breast cancer?

not at	not very	somewhat	pretty	a lot
all	much		much	

3a,b. Since you filled out the questionnaire, how much have you read about breast self-exams? About breast cancer?

not at	not very	somewhat	pretty	a lot
all	much		much	

4a,b. Since you filled out the questionnaire, how much have you seen in the media about breast self-exams? About breast cancer?

nothing	not very	somewhat	pretty	a lot
	much		much	

5a,b. How much do you think reading the pamphlet changed your outlook on breast self-exams? On breast cancer? On your health in general?

not at	not very	somewhat	pretty	a lot
all	much		much	

APPENDIX C

Pamphlet Contents, Page 1: Basic FactsBASIC FACTS

Breast cancer is a major cause of illness and death among American women today. About one woman out of every 10 in the United States will develop breast cancer during her lifetime. Until the disease can be prevented, the best way to protect yourself is through early detection and prompt treatment. The American Cancer Society recommends that all women perform breast self-exams (BSEs).

It is important for you to be familiar with your own breasts. After you learn how your normal breast tissue feels, you will be able to recognize a change if one occurs. You will increase your ability to feel different structures in your breast tissue by doing a self-exam every month.

BSE is an important part of early detection. In fact, most lumps are found by women themselves. The BSE guidelines are designed to help you feel confident in doing BSE each month.

Pamphlet Contents, Page 2: Gain-framed, Low-Cost Message

"What are the consequences of doing breast self-exams?"

- By doing breast self-exams now, you can prevent breast cancer from becoming fatal.
- By doing breast self-exams now, you can know how your normal, healthy breasts feel.
- By doing breast self-exams, you can take pride in yourself for caring about your health.
- By doing breast self-exams now, you will have an increased chance of living a long, healthy life.
- By doing breast self-exams now, you will probably not have to have your breasts removed if breast cancer is discovered.
- By doing breast self-exams now, you will probably not find a tumor that is not treatable.
- By doing breast self-exams now, you should not have to worry about dying from breast cancer.
- By doing breast self-exams now, you are not taking a huge risk with respect to your health.

"How much time and effort are involved?"

- Doing breast self-exams requires only five minutes of your time per month.
- Doing breast self-exams is a very simple procedure.
- In doing breast self-exams, you can choose one of three patterns, the one that is easiest for you.
- Breast self-exams can be done in a variety of places, e. g., in the shower, in bed, or in front of a mirror.
- Doing breast self-exams is probably one of the easiest of all health behaviors.

Pamphlet Contents, Page 2: Gain-framed, High-cost Message

"What are the consequences of doing breast self-exams?"

- By doing breast self-exams now, you can prevent breast cancer from becoming fatal.
- By doing breast self-exams now, you can know how your normal, healthy breasts feel.
- By doing breast self-exams, you can take pride in yourself for caring about your health.
- By doing breast self-exams now, you will have an increased chance of living a long, healthy life.
- By doing breast self-exams now, you will probably not have to have your breasts removed if breast cancer is discovered.
- By doing breast self-exams now, you will probably not find a tumor that is not treatable.
- By doing breast self-exams now, you should not have to worry about dying from breast cancer.
- By doing breast self-exams now, you are not taking a huge risk with respect to your health.

"How much time and effort are involved?"

- Doing breast self-exams requires regularity (examine the same time each month), complete coverage (examine all of your breast), consistent pattern, use of finger pads (press with top third of fingers), and adequate pressure (massage to feel deep breast tissue).
- In addition to doing breast self-exams every month, you should have a breast exam by your doctor at least every three years and a mammogram between the ages of 35 to 39.
- In doing breast self-exams, you should painstakingly choose one of three patterns: the circular pattern, vertical strip, or the wedge.
- Breast self-exams should be done in one or more of several carefully chosen places, e. g., in the shower, in bed, or in front of a mirror.
- Doing breast self-exams is probably one of the most involving of all health behaviors.

Pamphlet Contents, Page 2: Loss-framed, Low-cost Message

"What are the consequences of not doing breast self exams?"

- By not doing breast self-exams now, you cannot prevent breast cancer from becoming fatal.
- By not doing breast self-exams now, you cannot know how your normal, healthy breasts feel.
- By not doing breast self-exams, you cannot take pride in yourself for caring about your health.
- By not doing breast self-exams now, you will not have an increased chance of living a long, healthy life.
- By not doing breast self-exams now, you will probably have to have your breasts removed if breast cancer is discovered.
- By not doing breast self-exams now, you may one day find a tumor that is not treatable.
- By not doing breast self-exams now, you may have to worry about dying from breast cancer.
- By not doing breast self-exams now, you are taking a huge risk with respect to your health.

"How much time and effort are involved?"

- Doing breast self-exams requires only five minutes of your time per month.
- Doing breast self-exams is a very simple procedure.
- In doing breast self-exams, you can choose one of three patterns, the one that is easiest for you.
- Breast self-exams can be done in a variety of places, e. g., in the shower, in bed, or in front of a mirror.
- Doing breast self-exams is probably one of the easiest of all health behaviors.

Pamphlet Contents, Page 2: Loss-framed, High-cost Message

"What are the consequences of not doing breast self-exams?"

- By not doing breast self-exams now, you cannot prevent breast cancer from becoming fatal.
- By not doing breast self-exams now, you cannot know how your normal, healthy breasts feel.
- By not doing breast self-exams, you cannot take pride in yourself for caring about your health.
- By not doing breast self-exams now, you will not have an increased chance of living a long life.
- By not doing breast self-exams now, you will probably have to have your breasts removed if breast cancer is discovered.
- By not doing breast self-exams now, you may one day find a tumor that is not treatable.
- By not doing breast self-exams now, you may have to worry about dying from breast cancer.
- By not doing breast self-exams now, you are taking a huge risk with respect to your health.

"How much time and effort are involved?"

- Doing breast self-exams requires regularity (examine the same time each month), complete coverage (examine all of your breast), consistent pattern, use of finger pads (press with top third of fingers), and adequate pressure.
- In addition to doing breast self-exams every month, you should have a breast exam by your doctor at least every three years and a mammogram between the ages of 35 to 39.
- In doing breast self-exams, you should painstakingly choose one of three patterns: the circular pattern, vertical strip, or the wedge.
- Breast self-exams should be done in one or more of several carefully chosen places, e. g., in the shower, in bed, or in front of a mirror.
- Doing breast self-exams is probably one of the most involving of all health behaviors.

Pamphlet Contents, Page 3: How to do BSE

HOW TO DO BSE

1. Lie down. Flatten your right breast by placing a pillow under your right shoulder. If your breasts are large, use your right hand to hold your right breast while you do the exam with your left hand.
2. Use the sensitive pads of the middle three fingers on your left hand. Feel for lumps using a rubbing motion.
3. Press firmly enough to feel different breast tissues.
4. Completely feel all of the breast and chest area to cover breast tissue that extends toward the shoulder. Allow enough time for a complete exam.
5. Use the same pattern to feel every part of the breast tissue. The diagrams on the next page show the three patterns preferred by women and their doctors: the circular, clock or oval pattern, the vertical strip and the wedge.
6. After you have completely examined your right breast, then examine your left breast using the same method. Compare what you have felt in one breast with the other.
7. You may also want to examine your breasts while bathing, when your skin is wet and lumps may be easier to feel.
8. You can check your breasts in a mirror looking for any change in size or contour, dimpling of the skin or spontaneous nipple discharge.

Pamphlet Contents, Page 4: How to do BSE, cont'd.

Your monthly BSE should be carried out when your breasts are likely to be the least lumpy. If you have a regular menstrual cycle, you should examine your breasts at the end of your menstrual period. If you do not have menstrual periods, BSE should be done on the same day of every month.

If you notice any changes, see your doctor without delay. Take the opportunity whenever you see your doctor to discuss how to do BSE and what you feel when you do self-exams. Ask if you are doing BSE correctly and for comments to improve your BSE skills.

Remember, the best means of controlling breast cancer is by finding it early. Talk with your doctor. As partners, you will want to share information and you'll want to request advice on where to go to have a mammogram and how often you need to have the exams done.

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The final copies have been examined by the director of the
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fact that any necessary changes have been incorporated and
that the thesis is now given final approval by the Committee
with reference to content and form.

The thesis is therefore accepted in partial fulfillment of
the requirements for the degree of Master of Arts.

November 25, 1991
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